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MACHINERY ISSUE

THE IRON TRADE REVIEW

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CLEVELAND, DECEMBER 5, 1918

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Single Copies 15 Cents

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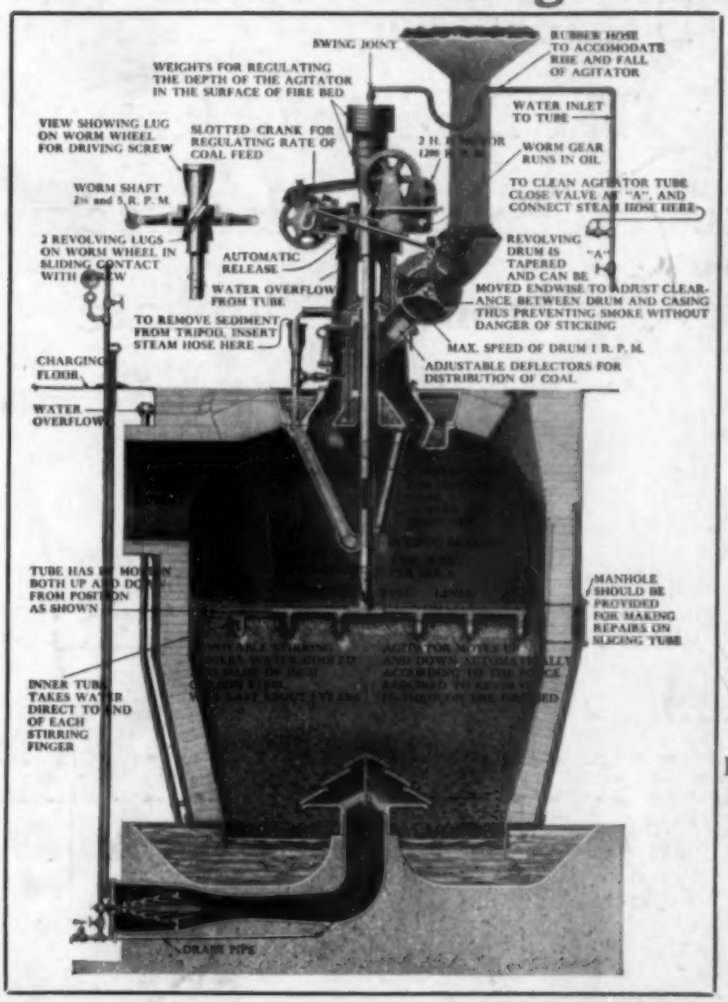
SWING JOINT
RUBBER HOSE TO ACCOMODATE RISE AND FALL OF AGITATOR
WEIGHTS FOR REGULATING THE DEPTH OF THE AGITATOR IN THE SURFACE OF FIRE BED
WATER INLET TO TUBE
VIEW SHOWING LUG ON WORM WHEEL FOR DRIVING SCREW
SLOTTED CRANK FOR REGULATING RATE OF COAL FEED
WORM GEAR RUNS IN OIL
WORM SHAFT 2½ and 5 R. P. M.
TO CLEAN AGITATOR TUBE CLOSE VALVE AT "A" AND CONNECT STEAM HOSE HERE
2 REVOLVING LUGS ON WORM WHEEL IN SLIDING CONTACT WITH SCREW
AUTOMATIC RELEASE
REVOLVING DRUM IS TAPERED AND CAN BE MOVED ENDWISE TO ADJUST CLEARANCE BETWEEN DRUM AND CASING THUS PREVENTING SMOKE WITHOUT DANGER OF STICKING
WATER OVERFLOW FROM TUBE
TO REMOVE SEDIMENT FROM TRIPOD, INSERT STEAM HOSE HERE
MAX. SPEED OF DRUM 1 R. P. M.
CHARGING FLOOR
ADJUSTABLE DEFLECTORS FOR DISTRIBUTION OF COAL
WATER OVERFLOW
MANHOLE SHOULD BE PROVIDED FOR MAKING REPAIRS ON SLICING TUBE
INNER TUBE TAKES WATER DIRECT TO END OF EACH STIRRING FINGER
DRAIN PIPE

Results:

1. Labor problem in your gas house solved by eliminating hand poking.

2. 25% of your coal saved.

3. Output of your furnaces materially increased.

Several leading American Steel Companies have placed repeat orders after demonstrating their practical value in service.

Let us refer you to installations in your vicinity.

Agitators built with Hand or Automatic Feed.

Described in Bulletins 7 and 8.

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PITTSBURG—Oliver Bldg.

NEW YORK—11 Broadway

Advertisers' Index, pages 230-231
Contents, page 1270 (Editorial)
"Where-to-Buy", page 138
Engineering Directory, pages 196-197
Classified Advertisements, pages 208-229

THE KOPPERS COMPANY

Builders of

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CONSULTING ENGINEERS

on the operation of

By-Product Coke Plants and Auxiliaries

UNION ARCADE BUILDING
PITTSBURGH, PA.

THE IRON TRADE REVIEW

Vol. LXIII Cleveland, December 5, 1918 No. 23

Expect Price Control to End Soon

Belief That Federal Regulatory Policy Will End at Close of Year Gains Greater Strength —More Cancellations Are Being Filed—Production Continues at High Level— Export Trade in Peace Times Gaining Recognition

RELEASE of the iron and steel industry from federal price regulation is confidently expected to come on Jan. 1. Removal of such control, which has now been in effect for 14 months, is definitely understood to rest in the hands of the industry itself. During the past few days the conviction has crystallized that the transformation of the industry from an abnormal war to a normal peace time basis can be best effected by a return to open market conditions. The united sentiment of the industry will be tested at a meeting on Monday, Dec. 9, at New York, called by the steel committee of the American Iron and Steel institute. Members of this committee have held several meetings in an effort to formulate a definite recommendation relative to the policy which the industry should favor and report to the war industries board. This board, which has been in charge of the government's interests in its price regulation program, may go out of effective existence on Dec. 31, simultaneously with the ending of the present agreement under which the iron and steel industry is operating.

Cancellations Increase

Fears of what the period of transformation would bring to the iron and steel industry are being gradually dissipated by market developments. The flood of cancellations which many producers had expected, has not developed although consumers generally are filing in greater number requests for annulment of contracts. The adoption of a definite policy in handling such requests is being given serious consideration by producers, the only evidence of united opinion so far being the strongly expressed determination of most sellers to hold buyers to their contracts. The multiphase character of the cancellations, however, makes this problem from the producers' viewpoint, an exceedingly complicated one. As illustrative, the British government has cancelled a heavy tonnage of plate business recently allocated to a number of eastern mills. One of these mills has accepted the cancellation, another which had begun work has presented a claim for $10 a ton indemnity, while the other mills have not decided upon their attitude.

Some mills now are shipping against old contracts, frequently at the request of the consumer to expedite delivery. New business in rather limited tonnages also has served to take up the slack engendered by cancellations from other sources.

Production Heavy

Production continues at the accelerated stride developed under the spur of war demand. Blast furnace production is maintained at a high level, the slight curtailment resulting from the influenza epidemic in the coke region. The output last month was 3,350,282 tons, and the average daily rate 111,676 tons. Final ore shipments are reaching lower lake ports, the total movement for the year being slightly over 61,000,000 tons. Ore supplies for blast furnaces are sufficient to insure full operations during the closed season of lake navigation.

Will Seek Exports

Evidence of the belief held by American manufacturers that this country must participate more actively in the world export trade is furnished by the plans announced last week and more definitely worked out in the past few days, for the organization of a large export combination to promote shipments of steel products to foreign countries. Such a combination was made possible by the provisions of the Webb law and it is significant that the first definite prospect of a return to open market conditions was met concurrently by the formation of this export company.

Scrap prices continue to soften with few sales taking place. Pig iron buying has appeared in small volume in the East. Automobile manufacturers continue in the market. Demand for plates is comparatively strong, and sheet bar sales are numerous.

DECEMBER 5, 1918

THE IRON TRADE REVIEW

A weekly publication devoted to the iron, Steel, Foundry and Metal-working Industries

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IN THIS ISSUE

	PAGE
Iron and Steel Market Review	1269
Editorials	1270, 1271
Iron and Steel Prices	1272, 1324
Index to Market Reports	1272
Iron and Steel Markets	1273
Blooming Mill Now Rolling Plates	1285
How Slag Temperatures Affect Firebrick	1288
How High-Grade Enameling is Done	1290
Operating Electrically-Driven Steel Mills	1292
Red Cross to Aid Military Blind	1294
Sand Blast Cabinet for Shell Cleaning	1294
France Saves Americans From Profiteers	1295
Comparing the Corrosion of Alloys	1296
Knowledge of the Deterioration Resistance of Engineering Materials is Essential to the Intelligent Design of Structures and Machines—A Short Comparative Method is Explained	
Northwest Assured Busy Future	1299
Confidence Rules in British Market	1301
No Trade Advantage for Germany	1302
Labor Department to be Readjusted	1304
Removing Bars to Export Trading	1306
Many Iron and Steel and Machinery Products Removed from Conservation List—Joint Regulation of Priority and Permit is Revoked—Unexpired Licenses as of November 15 Are Held Valid	
Contract Adjustments Raise Big Problem	1310
Expect Approval of Export Combine	1311

Future of Government Equipment

AN interesting question at this time, and one of considerable importance owing to its bearing on future trading in the machine tool market, is as to what disposition will be made of government-owned equipment. While many special tools are involved, the vast bulk of this machinery is of standard design, and due to this reason its future status is a source of much speculation.

That this equipment should be made up largely of standard tools is due to the fact that much of the special machinery necessary for war work was engaged in the manufacture of projectiles, and that, owing to the extensive development of the shell-making industry at the time this country entered the war, comparatively little governmental assistance was necessary. Had the war continued and the nation's shell program been carried out on the greatly increased scale indicated at the cessation of hostilities, such aid might eventually have been needed, but fortunately this development did not come to pass.

In the case of rifles, field artillery, airplane motors, ships, and certain other munitions, however, the situation was somewhat different. For the bulk of this work standard tools were required. Furthermore, production along most of these lines stood in need of considerable expansion, and this was accomplished by governmental assistance. And through such a combination of circumstances, the government came into the ownership of a vast number of standard machine tools.

Referring specifically to rifles and field guns, much work in the production of this equipment was being done for the entente powers before the United States entered the war, and the machinery of a number of eastern companies thus engaged was owned largely abroad. It was assumed at the time that the machinery, such as was fit, eventually would be shipped to the other side. However, the government purchased this equipment in an effort to speed up production of ordnance for its own requirements, and today retains the title.

It is but natural to assume that at least a fair portion of the equipment thus owned will be scrapped after the rigors of war-time production, and hence will not serve as a factor in future trading. Furthermore, as the shipbuilding program is scheduled to be carried out on a large scale for many months, the equipment thus engaged will continue to be employed. In other lines of war production however a radical curtailment of production now is being effected, freeing a large number of tools.

It is understood that the various companies have the option of buying this machinery, if they so elect; and while a number of the companies, especially some of the automobile manufacturers engaged in the production of airplane motors and heavy trucks, likely will avail themselves of this opportunity, it is too early at this time to ascertain to what extent this will be done. It appears likely, however, that despite the conditions and possibilities outlined, there will remain a large number of standard tools in the ownership of the government. Whether the latter will proceed with a wholesale scrapping of this machinery, or will offer it to the highest bidders as soon as the general situation clears up, or will store it in warehouses and liquidate it gradually, or hold it for the time when another national emergency possibly may arise, are some of the important phases of the question to which time alone will supply the answer.

Business Joins Hands

MORE representative business men actuated by the single purpose of advancing the nation's commercial interests are assembled in Atlantic City this week than on any previous occasion in the history of the country. It is not a meeting of steelmakers, of lumber manufacturers, of equipment builders, of coal producers, of textile trades, of railroad interests, etc., alone, but of all of these joined in a common gathering. The 400 war

service committees, representative of as many lines of industrial endeavor have been called together to speak the aims and needs of their particular fields in the great movement of reconstruction upon which the nation is embarking. Out of this all-embracing symposium of thought and discussion it is expected to emerge a composite, correlated policy behind which the entire business strength of the country may unite.

It is apparent, therefore, that the Atlantic City congress is a new and untried undertaking. Much has been written and said in the past as to the disorganized condition in which general business usually has found itself on big issues affecting the nation and itself. There are various industries which are well organized and pursue common principles with great benefit to themselves, but there has been no one medium through which all business might express its views and needs. The Atlantic City conference, therefore, offers a singular opportunity for all branches making up the great commercial fabric of the United States to participate in a unified movement. That the number of those participating is so large manifestly has its handicaps and the plan may prove too unwieldy for effective results. At all events, this general joining of American business minds represents an experiment which is without parallel in this country and may serve a notable purpose. Its deliberations will be watched by the entire country with great interest.

Lower Tool Prices a Reconstruction Aid

IN the great drama which has occupied the world's attention for four years, the machine tool has played an important if not the leading part. Splendid work has been done by the machine tool committee in Washington, but too much cannot be said of American tool builders. Their plants have been dedicated to the cause of supplying the equipment needs of the allies. Their product virtually has been commandeered to satisfy the demands of American plants created by war. Tool after tool has been built and thrown into the insatiable maw of war and plant operatives have bent with renewed energy to the task of building more. Uncle Sam alone has bought machine tools to a value in excess of $10,000,000, with which he fitted up plants for quantity production of essentials. Machine after machine has found a resting place on the bottom of the ocean, the mark of a Boche torpedo. Much equipment however has reached the other side. Docks have been equipped and plants have been made productive in record-breaking time. Thus were the products of American tool builders successfully mobilized to drive back the Hun.

Came the signing of the armistice. To the machine tool plants, rolled in that day and for many days thereafter, waves of cancellations. Just as the declaration of war found the builders rallied for conflict, so the signing of the armistice found them rallied for peace. Perhaps no industry was hit as hard as the machine tool industry by the cancelling movement of the war department, wherein contracts approximating $1,500,000,000 were wiped out. In many cases, cancellations were accepted; in others, they were not. For the most part the machines in the latter class were special and advantage was taken of the government's contract proviso to guarantee against loss. Adjustments are being made.

Now the readjustment period is faced. The machine tool industry calmly waits, seeing ahead large peacetime needs. In some directions, the reaction already is setting in. The used machinery market is being watched as a barometer. Many listings of second hand tools are being changed. New and reduced prices practically are being received each day. Recently, one dealer's morning mail contained nine. One punch and shear was reduced $700; a double end punch and shear was lowered in price by $250; two bull dozers now are $850 and $1250 less than a few weeks ago; a planer can be purchased for $400 below the prevailing price prior to Nov. 11; etc. When the used machinery market drops, a reduction in the price of new machines usually is foreshadowed. Because users realize this, purchases of tools, other than those absolutely necessary, are being postponed. Automobile manufacturers, for instance, who plan to return to quantity production of pleasure cars at an early date are not buying all the equipment they will need for the reason that they expect prices to come down. Other users manifest a similar hesitancy. Several dealers report that buying only is being done where it is absolutely necessary. Efforts of salesmen to obtain contracts result in a statement that purchases will not be made until after the first of the year.

Prices on some tools cannot come down. Where no abnormal rise was made no abnormal decrease can be expected. Where legitimate builders advanced prices legitimately in keeping with rising costs of labor and raw material, no great decrease is expected in the immediate future. Some builders however, whose prices were inflated under war demand, should give attention to that which now engages the world's attention—quick reconstruction. They should not be backward about reducing the prices on their equipment in order that purchases may be made quickly and plants speedily restored to a peacetime basis. Theirs is the opportunity now to add the service of peace to their record of war duty well performed.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE AND IRON ORE PRICES ON PAGE 1324

PIG IRON

Bessemer, valley	$35.20
Bessemer, valley, del. Pittsburgh	36.60
Basic, valley	33.00
Basic, valley del., Pittsburgh	34.40
Basic, delivered eastern Pa.	36.90
Basic, Buffalo, furnace	33.00
Malleable, valley, del. Pittsburgh	35.90
Malleable, Chicago, furnace	34.50
Malleable, Buffalo, furnace	34.50

GOVERNMENT SCHEDULE

1.75 to 2.25 silicon (No. 2 foundry, No. 2 plain, and No. 3 southern), $34 furnace is base.

2.25 to 2.75 silicon (No. 2X, No. 1 Northern foundry, and No. 2 southern), base plus $1.25 or $35.25 furnace.

2.75 to 3.25 silicon (No. IX) base, plus $3.00 or $37 furnace. 3.25 to 3.75 silicon base, plus $5 or $39 furnace.

3.75 to 4.25 silicon, $40.00, plus $1 for each ⅛ per cent of silicon up to 5.75 per cent.

No. 1X, eastern delivered Phila.	40.90
No. 2, valley del., Pittsburgh	35.40
No. 2 foundry, Cleveland furnace	34.00
No. 2 foundry, Ironton furnace	34.00
No. 1 foundry, Chicago furnace	35.25
No. 2 foundry, Chicago furnace	34.00
No. 2X, eastern del., Phila.	39.15
No. 2X, eastern, N. J. tidewater	39.55
No. 2X foundry, Buffalo furnace	35.25
No. 2 plain, del. Philadelphia	37.90
No. 2 plain, N. J. tidewater	38.30
No. 2 southern, Birmingham	35.25
No. 2 southern, Cincinnati	38.85
No. 2 southern, Chicago	40.25
No. 2 southern, Phila.	41.75
No. 2 southern, Cleveland	40.25
No. 2 southern, Boston	43.25
No. 2 southern, St. Louis	39.50
Virginia, No. 2X, furnace	37.50 to 38.50
Virginia, No. 2X, Phila.	41.85
Virginia, No. 2X, Jersey City	42.15
Virginia, No. 2X, Boston	43.25
Gray Forge, valley, del. Pittsburgh	34.40
Silveries, 8%, furnace	47.50
Ohio Silveries, 8%, Chicago	51.30
Tennessee Silveries, 8%, Chicago	52.50
Low phos. standard, Phila.	57.00
Low phos. Lebanon, furnace	51.00 to 53.00
Low phos. standard, Pittsburgh	54.40
Charcoal, Superior, Chicago	38.70 to 39.00
Charcoal, Superior, Buffalo	38.50
Charcoal, southern to 2 per cent silicon, furnace	51.00

COKE

(At the ovens)

Connellsville furnace	$6.00
Connellsville foundry	7.00
Pocahontas furnace	8.00
Pocahontas foundry	8.00
New River foundry	8.00
New River furnace	8.00
Wise county furnace	7.25
Wise county foundry	8.25

FERROALLOYS

Ferromanganese, 70 per cent delivered	350.00
Spiegel, 16 per cent fur., spot	70.00
Spiegel, contracts, furnace	70.00
Ferrocarbon, titanium, carloads, maker's plant	200.00
Ferrosilicon, 50 per cent, spot and contract, delivered	150.00 to 160.00
Bessemer ferrosilicon, 10 per cent	57.00
Bessemer ferrosilicon, 11 per cent	60.30
Bessemer ferrosilicon, 12 per cent	63.60

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

SEMIFINISHED MATERIAL

BILLETS AND BLOOMS

Open-hearth, Pittsburgh	$47.50
Open-hearth, Philadelphia	51.50
Open-hearth, Youngstown	47.50
Bessemer, Pittsburgh	47.50
Bessemer, Youngstown	47.50
Forging, Pittsburgh	60.00
Forging, Philadelphia	64.00

SHEET BARS

Open-hearth, Pittsburgh	$51.00
Open-hearth Youngstown	51.00
Bessemer, Pittsburgh	51.00
Bessemer, Youngstown	51.00

SLABS

Pittsburgh and Youngstown	$50.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$57.00
Grooved skelp, Pittsburgh	2.90c
Sheared skelp, Pittsburgh	3.25c

SHAPES, PLATES AND BARS

(In cents per pound)

Structural shapes, Pitts.	3.00c
Structural shapes, Phila.	3.245c
Structural shapes, N. Y.	3.27c
Structural shapes, Chgo.	3.27c
Tank plates, Chicago	3.52c
Tank plates, Pittsburgh	3.25c
Tank plates, Philadelphia	3.495c
Tank plates, New York	3.52c
Bars, soft steel, Pittsburgh	2.90c
Bars, soft steel, Chicago	3.17c
Bars, soft steel, New York	3.17c
Bars, soft steel, Phila.	3.145c
Bar iron, common, Phila.	3.745c
Bar iron, common, Chicago	3.50c
Bar iron, refined, Chicago	5.00c
Bar iron, common, Cleveland	3.67c
Bar iron, common, New York	3.77c
Bar iron, common, Pittsburgh	3.50c
Bar iron, refined, Pittsburgh	5.00c
Hard steel bars, Chicago	3.00c

RAILS, TRACK MATERIAL

Angle bars, Pittsburgh base	3.25c
Angle bars, Chicago base	3.25c
Standard bessemer rails, mill	$55.00
Stand. open-hearth rails, mill	57.00
Light rails, 25 to 45, mill	3.00c
Relaying rails, light, St. L.	60.00 to 67.00
Spikes, railroad, Pitts.	3.90c
Track bolts, Pittsburgh	4.90c
Track bolts, Chicago	5.115c
Tie plates, Chicago	3.25c

WIRE PRODUCTS

(Per 100 lbs. to jobbers; retailers 5c more)

Wire nails, Pittsburgh	$3.50
Coated nails, Pittsburgh	3.45
Plain wire, Pittsburgh	3.25
Galvanized wire, Pittsburgh	3.95
Polished staples, Pittsburgh	3.65
Galvanized staples, Pittsburgh	4.35
Barb wire, painted, Pitts.	3.65
Barb wire, galvanized, Pitts.	4.35
Cut nails, Pittsburgh	5.00

CHAIN, PILING, STRIP STEEL

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	7.50c
Sheet piling, base, Pitts.	4.00c to 5.00c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 6.50c.

Market Report Index

	Page
Weekly Market Review	1269
Pig Iron	1273
Coke	1275
Scrap	1276
Wire	1277
Ore	1277
Structural Shapes	1277
Semifinished Steel	1278
Nuts, Bolts and Rivets	1278
Bars	1278
Cars and Track Materials	1279
Plates	1279
Tin Plate	1279
Ferroalloys	1280
Merchant and Cast Iron Pipe	1280
Sheets	1280
Nonferrous Markets	1284
Coke By-Products	1305
Refractories	1305
Machine Tools	1314

SHEETS

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	5.00c
No. 28, bessemer, Pitts.	5.00c
No. 28, open-hearth, Chi.	5.27c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	5.00c
No. 28, bessemer, Pitts.	5.00c

GALVANIZED

No. 28, open-hearth, Pitts.	6.25c
No. 28, bessemer, Pitts.	6.25c
No. 28, open-hearth, Chi.	6.52c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	4.25c
No. 10, bessemer, Pitts.	4.25c
No. 10, open-hearth, Chi.	4.52c
No. 19, open-hearth, Phila.	4.495c

TIN PLATE

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.75

IRON AND STEEL PIPE

Base Pittsburgh

Base, Pittsburgh	Black Per cent off	Galv. Per cent off
¾ to 3 in., butt, steel	51	37½
¾ to 3 in., butt, iron	33	17

BOILER TUBES

Steel, 3½ to 4½ inches, l. c. l.	30
Iron, 3½ to 4½ inches, c. l.	12½

CAST IRON WATER PIPE

Without War Freight Tax

(Class B Pipe)

Class A pipe is $1 higher than Class B.

Four-inch, Chicago	69.80
Six-inch and over, Chicago	66.80
Four-inch, New York	70.70
Six-inch and over, N. Y.	67.70
Four-inch, Birmingham	63.00
Six-inch and over, Birmingham	60.00

HOOPS, BANDS, SHAFTING

Hoops, Pittsburgh	3.50c
Bands, Pittsburgh	3.50c
Hot rolled strip steel, Pitts.	3.50c
Hot rolled strip steel, Pitts. stamping quality	4.00c
Shafting, Pitts., carloads	17 off to list
Cotton ties, Nov., per bundle	$1.97

RIVETS

Structural rivets, Pittsburgh	4.40c
Boiler rivets, Pittsburgh	4.50c
Rivets 7/16 in. and small., Pitts.	50 and 10 off

NUTS AND BOLTS

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅝ x 6 inches, smaller and shorter)

Rolled thread	50-5 off
Cut thread	40-10-5 off
Larger and longer	40 off

MACHINE BOLTS

(⅝ x 4 inches, hot pressed nuts)

Rolled thread	50-10-5 off
Cut thread	50-5 off
Larger and longer	40-10 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	60-10-10 off
Cold pressed semifinished hexagon nuts ⅞ in. and smaller	70-5 off
Gimlet and cone point lag screws	50-10 off

NUTS

Hot pressed, square blank	2.50c off
Hot pressed, square tapped	2.30c off
Hot pressed, hexagon blank	2.30c off
Hot pressed, hexagon tapped	2.10c off
Cold pressed, square blank	2.25c off
Cold pressed, square tapped	2.00c off
Cold pressed, hexagon blank	2.25c off
Cold pressed, hexagon tapped	2.00c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Quotation on leading products December 4, average for November, 1918, average for September, 1918, and average for December, 1917. Prices are those ruling in the largest percentage of sales at the dates named.

	Price Dec. 4, 1918	Average prices Nov. 1918	Sept. 1918	Dec. 1917		Price Dec. 4, 1918	Average prices Nov. 1918	Sept. 1918	Dec. 1917
Bessemer, valley del., Pittsburgh	$36.60	36.60	36.60	37.25	Iron bars, Cleveland	$ 3.64	3.64	3.64	3.64
Basic, valley del., Pittsburgh	34.40	34.40	33.40	33.95	Iron bars, Chicago mill	3.50	3.50	3.50	3.50
*No. 2 Foundry, Pittsburgh	35.40	35.40	34.40	33.95	Beams, Chicago	3.27	3.27	3.27	3.00
*No. 2 Foundry, Chicago, furnace	34.00	34.00	33.00	33.00	Beams, Pittsburgh	3.00	3.00	3.00	3.00
Lake Superior charcoal, Chicago	38.70	38.70	37.70	37.50	Beams, Philadelphia	3.245	3.24	3.23	3.18
Malleable, valley	34.50	35.90	34.90	34.45	Tank plates, Pittsburgh	3.25	3.25	3.25	3.25
Malleable, Chicago	34.50	34.50	33.50	37.50	Tank plates, Chicago	3.52	3.52	3.52	3.25
**Southern, No. 2, Birmingham	35.25	35.25	33.50	33.50	Tank plates, Philadelphia	3.495	3.49	3.48	3.43
*Southern Ohio No. 2, Ironton	34.00	34.00	33.00	33.00	Sheets, blk., No. 28, Pittsburgh	5.00	5.00	5.00	5.00
Basic, eastern del., eastern Pa.	36.90	36.90	32.00	33.00	Sheets, blue anld., No. 10, Pittsburgh	4.25	4.25	4.25	4.25
**No. 2X Virginia, furnace	38.00	38.00	33.50	33.50	Sheets, galv., No. 28, Pittsburgh	6.25	6.25	6.25	6.25
**No. 2X, eastern del., Philadelphia	39.15	39.15	34.50	34.00	Wire nails, Pittsburgh	3.50	3.50	3.50	3.50
Ferromanganese, 70%, delivered	250.00	250.00	250.00	247.50	Connellsville furnace coke	6.00	6.00	6.00	6.00
Bessemer billets, Pittsburgh	47.50	47.50	47.50	47.50	Connellsville foundry coke	7.00	7.00	7.00	7.00
Bessemer sheet bars, Pittsburgh	51.00	51.00	51.00	51.00	Heavy melting steel, Pittsburgh	28.50	28.75	29.00	30.00
Open-hearth sheet bars, Pittsburgh	51.00	51.00	51.00	51.00	Heavy melting steel, eastern Pa.	26.50	28.00	28.50	28.75
Open-hearth billets, Pittsburgh	47.50	47.50	47.50	47.50	Heavy melting steel, Chicago	28.00	29.00	29.00	28.90
Steel bars, Pittsburgh	2.90	2.90	2.90	2.90	No. 1 wrought, eastern Pa.	34.00	34.00	34.00	35.00
Steel bars, Chicago	3.17	3.17	3.17	2.90	No. 1 wrought, Chicago	32.00	33.25	33.50	35.00
Iron bars, Philadelphia	3.745	3.74	3.73	3.68	Rerolling rails, Chicago	33.00	34.00	34.00	35.60

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.

(FOR ADDITIONAL PRICES SEE PAGE 1324)

More Iron Cancellations Are Sought

Requests for Annulment of Previous Orders Are Reaching Makers in Somewhat Greater Volume—Industry Shifting to Peace Basis With Minimum of Friction—Buying in East

Chicago, Dec. 3.—Continued surprise and gratification is expressed by all factors in the pig iron market at the unexpected ease with which war conditions are being supplanted by peace. Less than 10 requests for cancellation have come to one large pig iron producer and another has received only two. In no case has a cancellation been asked on gray iron tonnage. Cancellations are not being accepted and since the ruling was made by the war industries board that allocations which had been made into formal contracts are beyond the control of the government, that angle of the situation has been cleared. Allocations which have not been followed by a formal contract are being considered as legitimate contracts and are awaiting a decision by the government. Some requests have been received for cancellation with request that a bill be rendered for the loss incurred in stopping shipments, that the melter may be able to recover from the government along with other items of loss growing out of the government's cancellation of its contract. Sellers are refusing to take this action and are advising melters to sell their iron on the market and charge the government with whatever loss is met from this transaction. It is believed that selling in this way will disturb the market less than if dealers or furnaces made the resale. Not much tonnage is involved in this situation and low phosphorus iron appears likely to furnish a larger proportion of resale business than other grades. However, melters who normally use this iron probably will absorb all offerings.

The greater portion of pig iron to be produced during the first half of 1919 is already contracted in this district but some selling is being done by southern interests. A slight but steady buying movement is in progress in the north which bids fair to absorb the remaining tonnage for first half in a short time.

Considerable repressed demand for pig iron is known to exist, these buyers apparently waiting on the supposition that removal of price regulation may result in a lower market. Just where this iron can be placed is one of the problems for the future. One producer says that on the basis of present high costs a reduction of $5 per ton would force out of blast every merchant stack in the country except those on the Great Lakes and at Birmingham and until present cost of raw material and labor are materially less, pig iron prices cannot be shaded a great deal.

Cancellation Requests Numerous

New York, Dec. 2.—Requests for cancellation of pig iron contracts for delivery over the first half of next year have been more numerous during the past week and involve considerable tonnage in the aggregate. In no case as far as known have any of these requests been given any consideration by the furnaces. The latter interests remind the trade that when pig iron was selling at $50 to $55 in the summer of 1917, they continued to make deliveries on contracts booked long before, at prices in many cases under $20, and since they kept their obligations at that time, they expect the buyers to keep theirs now. The pig iron makers are very firm in their expressions that pig iron contracted for must be taken by the buyer. One representative maker today said that he would deliver every ton of iron for which he has a contract and will sue the buyers in case it is necessary to make them carry out their end of the deal. In most cases consumers who make requests for cancellations explain that the iron was to have been used for government purposes and now that this work no longer is needed, they do not want the iron. In reply to such statements, pig iron makers assert that it is of no concern to them whatever, what the consumer expected to do with the iron and why he is not in a position to use it now. Among interesting developments during the past few days is the announcement that the American Loco-

motive Co., beginning Dec. 1, is operating its plant at Schenectady, N. Y., on a five-day a week schedule instead of six days as before. This is due to the small amount of work which the locomotive company has on its books, and particularly to the cancellation of 500 government locomotives which were to have been made for shipment to France. Considerable export inquiry continues to be circulated in the trade but very little business of this character is being placed, due both to lack of iron and of ocean shipping space. On the whole, the situation with respect to domestic demand is quiet. Most consumers however, who feel assured as to the future demand for their products exhibit a desire to close rather than to wait for developments. As a result, several thousand tons of foundry iron have been sold in this district during the past week for first half delivery. One consumer alone took 1000 tons. An eastern Pennsylvania furnace which has been soliciting first half business lately has booked 8000 to 10,000 tons during the past couple of weeks, it is learned. A Buffalo furnace has booked a little first half foundry business in this district during the past week and a Virginia maker also has sold a little first half tonnage here.

Furnaces Contracting

Buffalo, Dec. 3.—Although some furnaces are proceeding cautiously in the matter of new business, others are willing to take it on and during the past week have assumed considerable new business consisting of small tonnages for early shipment. These producers believe a new demand is likely to develop on satisfactory lines. The furnaces which are not soliciting business are those which are already provided with orders for the first half of next year. The uncertainty which exists with them now is to future prices. Some producers believe the government will maintain prices, not taking any action to produce a break one way or the other. Others think all restrictions may be taken off. One furnace which had not been doing much contracting, having been working on government orders, is now sold up until the end of the first quarter. Another furnace is booked until February, and another is fairly well covered for the entire first half. Coke shipments are coming in better.

British Basic Suspended

Cleveland, Dec. 3.—The remaining portion, amounting to about 40,000 to 50,000 tons for December delivery of the 100,000 tons of basic placed some weeks ago by the British government with a local producer has been suspended. This order grew out of an allocation of 180,000 tons for November-December shipment of which 80,000 tons went to the south. It is not known whether the remaining portion of the order with southern makers has been affected. Apart from this suspension, there have been no important suspensions or cancellations of iron on order in this district. Some tonnage of foundry and low phosphorus which had been allocated has been cancelled, but the amount is comparatively small. Part of this was for 1919 delivery. Allocations still are going forward totalling 22,000 gross and 18,000 net less cancellations, in the week. The bulk of this tonnage was of foundry iron amounting to about 14,000 tons which went largely to the Emergency Fleet corporation. The remainder was made up of 2000 tons of bessemer and some low phosphorus and other grades. Total allocations since May 1 have been brought up to 1,866,000 tons. New requests for allocations are tapering off. There is not a great deal of activity in the open market. Some inquiries of the 500 to 1000-ton variety in foundry and malleable are being received for shipment as far ahead as the first half. These sales are being made subject to the usual provisions that the present government or the last government prices shall prevail. Some selling of bessemer ferrosilicon has been done in this territory. Some of the furnace capacity of the McKinney Steel Co. in this city which has been almost wholly on basic to fill allocations will be turned over to foundry iron around Jan. 1.

Co-operation is Recognized

WAR INDUSTRIES BOARD
Washington
November 27, 1918

Mr. C. J. Stark, Editor,
THE IRON TRADE REVIEW,
Cleveland, O.

Dear Mr. Stark:

Would you be kind enough to send me several copies of your pamphlet "Priority in War Industry." It embodies a splendid insight into the activities of the Priorities Division, and although as of the present time it embodies *what was* rather than *what is*, it is nevertheless a tribute to your spirit of helpful co-operation in the great cause which has been so successfully upheld.

Very truly yours,
(Signed) Maurice Hirsch,
Secretary Priorities Committee.

Optimism Prevails at St. Louis

St. Louis, Nov. 30.—The market for pig iron in this district is featured by a clearly defined and growing optimism. A considerable part of the uncertainty which immediately preceded and followed signing of the armistice is vanishing. The wholesale cancellations expected with cessation of hostilities have failed to materialize, and many leading consumers who were engaged in war work are apparently as anxious to get iron now as when it was thought the war would continue six months or a year longer. Peace demands in certain lines of industry are developing much sooner than it was thought possible. War plants are strenuously clearing their decks for action along antebellum lines. About the only branch of activity touching the iron and steel trade which has not been revived is construction. There has, however, been considerable work in the way of additions to plants and manufacturers who see business ahead are not hesitating to enlarge capacities to handle it. Producers of pig iron in the district proper are not affected morally or otherwise by peace developments. They are sold far into 1919, and seem confident that they will experience little difficulty selling their outputs at the close of present contracts. Southern furnace interest are showing a disposition to await developments. They, too, are committed through the first half of next year.

Shipments Are Held Up

Cincinnati, Dec. 2.—There is no use in disguising the fact that many melters are holding up shipments. Cancellation requests are also more numerous. It was thought last week that the situation had been fairly well discounted by consumers of iron and that hold-up orders would cease. Offsetting this is the urgent demand for iron from agricultural implement makers, but this is only a comparatively small item. The foundries engaged in making castings for machine tool firms are more uneasy than any other class of melters. Their business has been curtailed to the point where they must ask for relief or else pile iron for future consumption. This is a situation that the foundries are now trying to avoid, although only a short time since they were urging forward shipments so that their yard stocks could be kept normal. No inquiries are out from any source, and even those usually sent out from buyers wishing to keep in touch with the market, are missing.

Need More Pig Iron

Birmingham, Ala., Dec. 3.—Considerable pig iron will be needed for delivery during the first half of 1919 by southern manufacturers, orders already having been booked. No apprehension is expressed as to what the market will do when the government releases control over prices, the consensus of opinion among producers being that there will be an upward move in quotations. Inquiries are numerous. Production in Alabama shows but little improvement and will not until supplies of raw materials increase. With labor hampered by influenza, there is hardly hope that raw material will be sufficient to increase furnace operations until 1919. Companies in the Birmingham district are fully aware of barren furnace yards. Sales agencies throughout the country for southern furnace interests intimate there will be need for a large quantity of iron. Steel mill operations show no change. One plant had to shut down by reason of cancellation of orders, that being the pipe works at Holt, in Tuscaloosa county. This company has a furnace in operation. Some sales of charcoal iron were noted during the past week.

Would Enforce Contracts

Philadelphia, Dec. 3.—The English government has cancelled large orders for basic recently allocated to southern furnaces. The total reported is 100,000 tons. American Pig Iron Distributors association met this afternoon to discuss conditions. Contract cancellations requests were taken up. The opinion was unanimous that buyers must be held to their contracts.

A point embarrassing many sellers is in connection with contracts booked many months ago when sellers did not

look forward to discontinuance of fixed prices and hence contracted at government prices in effect at time of delivery. The question bothering them is prices to which they can hold buyer on deliveries on contracts after government prices no longer prevail.

Contract cancellation requests have been more numerous during the past week and the tonnage involved is considerable. At the same time most consumers are preparing to meet their obligations without question and some are hurrying deliveries. New sales are slow although week's total runs up to more than 10,000 tons, including a round tonnage of basic and considerable foundry iron.

One eastern maker has sold 26,000 tons of first half foundry since the signing of the armistice. Most of it previously had been arranged for verbally. This business was taken at government price in effect on delivery or last government price in effect.

It is expected that restriction on low phosphorus sales will be lifted shortly.

Buyers Moving Cautiously

Pittsburgh, Dec. 3.—Indications point so strongly to the termination of fixed government prices with the end of the year that consumers of pig iron are inclined to move slowly in the matter of their future requirements. A few inquiries are constantly coming on the market but they are for small tonnages and are for prompt shipment. A resale of 1000 tons of basic at the government price has been made, the original buyer, because of cancellation of government work, finding that he had this tonnage to spare. The house reporting this sale states that a very much larger tonnage might be moved if available. Buyers who are not covered for the first quarter and first half of next year seem to await some definite information with regard to prices before filling such wants. Blast furnace interests do not share the belief held in some quarters that the restoration of an open market is going to mean lower prices. It is pointed out in the first place that the cancellations of steel orders have not yet absorbed the iron shortage that was said to exist a short time ago and that the demand still is in excess of the supply. Attention also is drawn to the fact that production costs have risen steadily for some time past and that today there are some stacks that are no more than breaking even on present market prices. Consequently, it is stated that any material recession from present prices would mean the suspension of operations of such plants with the attendant loss in production. There has been a considerable loss of production in the last week or 10 days as a result of the fact that fuel supplies have been seriously curtailed by the prevalence of influenza among soft coal miners and coke oven operators. However, the fuel situation has improved during the last day or two and it is noted that the Carnegie Steel Co. now is operating 51 of its 59 furnaces which is a gain of two over the number in blast a week ago. Some valley and Pittsburgh district stacks are running on reduced blast because of the meagerness of coke supplies and unless some furnaces are able to secure fresh supplies within a few days, they may be abliged to bank.

Coke Supply Still Short

Some Improvement Shown in Tonnage Available But Furnace Supplies Are Low—Two More Stacks Blow in

Pittsburgh, Dec. 3.—Although the influenza epidemic seems to have been checked in the coal mining regions and there has been some slight increase in the supply of coke, the blast furnaces still are going along close to the wind in the matter of supplies. A number of the merchant stacks have been kept in operation only because there were stockpiles to draw from. The Carnegie Steel Co. has blown in two furnaces since a week ago that were banked for want of fuel but this is practically the only tangible sign of any improvement in the supply situation. The car supply is 100 per cent and the shortage that exists is purely a primary one. Congestion of freight on the various lines has been pretty well reduced and the prospect is good for prompt shipments, once the production recovers. New contracts for coke are few and far between, there being a general disposition to await more definite light as to the iron and steel situation as well as the matter of government control of coke prices before going ahead. Official announcement has been made by the fuel administration that it had ceased allocations of coke. This means that with the exception of prices the market once more is an open one and that the government will neither directly nor indirectly take any hand in distributing supplies. Production of coke in the Connellsville region for the week ending Nov. 23 was 242,105 tons as compared with 259,930 tons, according to *The Connellsville Courier*.

Embargo Lifting Causes Cancellations

New York, Dec. 2.—Important developments promise to characterize the eastern coke market during the next few weeks as a result of the removal of the embargo, last week, against the movement into and out of New England. Numerous consumers have lost no time in making arrangements for obtaining their forward supplies from the Connellsville district, as they obtained them before the embargo became effective. They are taking such action because of the fact that they are able to get Connellsville coke at a much lower cost than New England by-product coke at present prices. The price at which the New England by-product producer has been selling and which he continues to ask, is $14, ovens, the consumer paying the freight to his works. Inasmuch as the Connellsville coke can be had at $7, ovens, plus the freight rate of $4.40 to New England, the cost in New England is at least $3.50 per ton lower than that of the New England by-product coke. Consumers already have begun to send requests to New England producers for cancellations of first half contracts and the trade looks forward with interest to the attitude that this producer will assume.

Foundry Trade Well Supplied

Cincinnati, Dec. 2.—At this date last month foundry coke consumers were, in some instances, hard put for fuel. The latest reports now show that nearly all consumers of foundry coke have more than they can use to advantage. Shipments are very free, with the exception of the New River district that is diverting its coke to other centers. Although oven operators apparently have been wrapped up in the needs of furnace and foundry consumers they have not entirely overlooked the held of domestic uses, which is expected again to be an outlet for considerable tonnage.

Market Continues Strong

St. Louis, Nov. 30.—The market for coke continues strong, under a broad and apparently healthy demand. The inquiry for metallurgical coke is especially brisk and consumers who for months have been forced to put up with an inferior quality are now hoping to get a few cars of good coke. The past two weeks have been marked by greater activity among dealers, who are gradually resuming their former relations with customers in anticipation of the government relaxing control of distribution. Leading consumers are desirous of stacking against winter needs, but none have been able to accomplish much in that direction. By-product ovens in the district, notably the leading interest, have been able to sell small tonnages currently, but this has not been sufficient to appreciably affect the general situation. The belief prevails among coke dealers here that this industry will be the first of any allied with the steel and iron trade to be relieved of government supervision and return to normal.

Good Demand at Birmingham

Birmingham, Ala., Dec. 3.—Inquiries continue coming in for coke and manufacturers say that production is not keeping up with the demand. The coal production in Alabama is showing some improvement, the influenza epidemic being on the wane. For the week ending Nov. 23 the coal production in this state amounted to 358,693 tons against 329,190 for the previous week. Coke production is up to the capacities of the ovens in operation. No hesitation is noted in the development of by-product coke ovens in the Birmingham district, 304 ovens being under construction, 154 by the Tennessee Coal, Iron & Railroad Co., 30 by the Birmingham Coke and By-Products Co., and 120 by the Sloss-Sheffield Steel & Iron Co. It is stated that while toluol production may be materially reduced benzol will be experimented with in the production of motor fuel. It is reported that English engineers and chemists will soon begin investigations in the Birmingham district.

A reduction of 25 per cent in Argentina and Australian ocean freight rates and the release of British steamers from requisition is announced.

Decline on Scrap Continues

Prices Soften Although Little Business is Offered—Stocks Generally Large—Consumers Are Waiting for End of Quarter Before Buying

FOR COMPLETE SCRAP PRICES SEE PAGE 1324

Chicago, Dec. 3.—Scrap continues to soften and prices are slipping gradually on all grades except those used in open hearths. The latter have begun to show some signs of receding from the maximum quotations where they have been stationary for months. This tendency is exhibited in the appearance of a slight spread below the maximum figure. Dealers find little business offering. In some cases smaller operators are offering their material to consumers at concessions and finding little response. Railroads are marketing little compared with their usual tonnages and the only important list now pending is that of the Chicago & Northwestern, containing 3675 tons, of which 425 tons are of mixed steel.

Prices Still Receding

New York, Dec. 2.—Activity in the New York scrap market appears virtually at a minimum. The trading noted recently by brokers and dealers in covering on old contracts has diminished considerably, owing in part to the further cancellation of orders, and consumers generally continue to play a waiting game. As result of this dullness, prices on several grades have made further declines during the past week, and due to the total lack of trading in some of these instances, it is exceedingly difficult to ascertain the real market level. Such instances may be found in old steel shafting and wrought material, which although holding nominally at the reduced prices of $32 and $27.50 to $28, respectively, are in virtually no demand. A drop has been made during the past few days in stove plate and grate bars, these now holding at $22 to $23, f.o.b. ..ew York. Heavy melting steel also is slightly lower. Borings and turnings, however, remain firm, and while demand for cast scrap has fallen off considerably, this material, too, is unchanged.

Demand Still Limited

Pittsburgh, Dec. 3.—Consumers of scrap still maintain an attitude of indifference in the matter of further supplies. Most of the steel mills have from 60 to 90 days' supplies on hand and these supplies are being increased rapidly in the endeavor of dealers to complete their contracts by the end of the year. Present government prices are effective only until then. Cancellations continue to be made when deliveries are not on time and not a pound more than the contract calls for will be accepted, while as usual when consumers are well supplied, they are very exacting on their inspections and rejections are numerous. Practically the only demand for rejected and cancelled tonnages comes from dealers who have contracts to cover. Prices merely are nominal and in the case of steel mills' needs, buyers probably would have no trouble in securing liberal tonnages well under government prices. Firmness in pig iron finds reflection in cast scrap.

Heavy Melting Down

Buffalo, Dec. 3.—Heavy melting steel is being quoted today in the Buffalo scrap market at $27 to $28. The price was forced down by a period of no buying on the part of the mills. Old orders remaining unfilled by the dealers still command the government maximum for delivery up until Jan. 1. Most of the trading being done now is that between dealers, the general market having become almost stagnant. Inspection of steel scrap has become still more rigid and rejections are numerous. The heavy melting steel which goes into plants now must be of the highest grade, or it is not accepted. With regard to the price revision of Jan. 1, dealers are more inclined to the belief that the era of government control will end with that date. Otherwise, dealers believe, it is inevitable that a reduction of $5 per ton on all scrap grades will be made. Mills are waiting for developments as are the scrap men.

Uncertainty Generally Prevails

Cleveland, Dec. 3.—Hope is expressed by both consumers of and dealers in scrap iron and steel in this district that the government will relinquish its control of prices Dec. 31. To compel another period of contracting—which will result if prices are continued for the first quarter of 1919—and then abolish maximum schedules will put the industry to unwarranted strain, is the contention. Regardless of whether price control is ended at the end of this or another quarter, or of the outcome of the Dec. 11 meeting, consumers say they will not contract for any scrap until the beginning of the year. Too much uncertainty prevails, they claim, to permit of a clear view of the trend in the first half of 1919. Consumers look for quite a break in price when the free market comes. Dealers agree that prices are destined to fall, but assert prices will not be run down very much. One Buffalo consumer of heavy melting steel is reported willing to take any and all shipments at $29, while most dealers say $28 to $28.50 is a very fair price. A local buyer is understood to have obtained some tonnage of steel at $27 to $27.50, delivered. Trading still is confined to dealers, and prices of all grades would be much lower were there any sizable transactions. Car service now is the best in months.

Trend Continues Downward

Cincinnati, Dec. 2.—The trend of prices is still downward, but there is such a small amount of business in hand that dealers are not willing to state what average quotations should be. A large number of complaints are registered as to cancellations of orders. So far the tonnage is not very much, but if the movement should spread it might cause considerable embarrassment. Melters of foundry scrap are not using one-half of their usual requirements. The majority of nearby foundries are not melting anything like the usual quantity of metal because so many orders for castings have been held up. Only nominal figures are quoted, although it is stated that no further reductions are anticipated before the end of the year.

Prices Drop Still Further

St. Louis, Nov. 30.—Sharp revisions downward were made in the scrap iron and steel market here this week but even radical changes in the lists of leading dealers hardly represent the full extent of the decline. Business has come practically to a standstill, and anyone willing to purchase can almost name his own price. Considering conditions of apparent scarcity which existed a few weeks ago, offerings are surprisingly large, especially those of smaller dealers and yard men. The latter formed an opinion that so long as the war lasted there would be a limitless demand for scrap and prices would remain high. A natural outcome of this idea was an accumulation of stocks. There is as great an eagerness to sell now as there was heretofore to hoard. The offers to sell have been met with indifference amounting to coldness, which fact has stimulated still further the frantic desire to unload. Men long in the business here declare they have never witnessed such a sudden transition from optimism to discouragement. All classes of consumers who can cancel contracts are doing so, and where material must be taken they are requesting that shipments be held back as long as possible. Speculators have been operating to a considerable extent, but all want to take the selling position. Interest centers in probable government action on prices. Consensus of opinion is that present minimums, which run until Jan. 1, will be abolished on that date. Another point on which there is no end of conjecture is future railroad supplies. Data on this question are extremely difficult to secure. Conditions with the carriers, since going under government control, are absolutely unprecedented, and the public has not been informed as to scrap accumulations of the roads. Should there be extensive junking of cars and programs of replacements much tonnage will be available. The St. Louis Terminal railroad disposed of 1200 tons this week on about the only bid received. Other roads centering here are withholding lists because of the unstable market.

Southern Market Inactive

Birmingham, Ala., Dec. 3.—There is but little business being transacted by the scrap iron and steel dealers in the Birmingham district, the market being practically at a standstill. Delivery on old contracts continues, and consumers who have not stock in hand or under contract are buying for immediate needs only. The dealers

are getting in just enough stock to keep up assortments. Opinion expressed by the trade is to the effect that not until there has been a complete readjustment in the pig iron and steel market will the scrap market regain its equilibrium. The quotations given are but tentative, and consumers usually make their own offer without consulting the price list.

Buying in East

Philadelphia, Dec. 3.—Eastern scrap market is featured by active buying of heavy melting steel. At least two consumers bought large tonnages at $26, delivered, which now is the ruling price. The tone in scrap is weak throughout and sales establish No. 1 yard wrought at $31.50. Wrought pipe, new specifications, is at $30 to $31, ungraded $22 to $23, and borings $18 to $19, blast furnace turnings $16.50 to $17, steel shafting $35 to $37, stove plate $27 to $28, No. 1 forge, $25.50 to $26.50, frogs, switches, guards $25.50 to $26.50. Explanation of the great reduction in ungraded wrought pipe is that mills are no longer willing to take this in place of new specification pipe. Prices not yet affected by weakness are unchanged because of lack of business.

Last Cargoes

Of Iron Ore Now Being Carried—Shipments Are Heavy

Cleveland, Dec. 3.—Final ore cargoes of the 1919 season are now enroute to lower lake ports. Official statistics from the office of the railroad administration at Duluth indicate total shipments from all Lake Michigan and Lake Superior ports during 1918 were 61,034,763 tons compared with 62,498,901 tons in 1917, a decline of 1,464,138 tons. The tonnage shipped is sufficient to supply blast furnaces during the closed winter season, the decrease in fact resulting largely from the elimination during the latter part of the season of about 2,000,000 tons of ore which was contracted for but was not urgently required. The vessel tonnage thus released was used in the coal and grain trade.

Coal shipments, which were delayed in the early part of the season, to permit shipments abroad, have been heavy recently, the final figures indicating that about 1,210,000 tons more of bituminous coal were carried this year than in 1917, the anthracite tonnage, however, falling off 254,500 tons. The grain movement on the lake shows a great increase.

Preliminary work is being continued in the preparation of cost figures for possible submission at the quarterly price fixing conference at Washington, originally scheduled for next week. The growing belief that federal price regulation will be discontinued makes the announced meeting of little interest, particularly since first quarter prices in the case of iron ore would mean little as the shipping season does not begin until the second quarter.

The Smolensky-Aronson Scrap Iron Co. has bought a tract, 234 x 263 x 379 feet, at Lincoln avenue and Robey street, Chicago, including a factory building.

Small Demand for Shapes

Few Structural Projects Are Appearing in East and Early Closing Unlikely—One Buyer Finding Difficulty in Closing Quickly

New York, Dec. 2.—A few new structural projects are talked of in this district but do not appear to be near the culminating stage. It is reported that the proposed building on Broadway for the Cunard line which originally was brought out a year ago and which has been in abeyance since, may come up again shortly for action. It also is stated as possible that two large new hotels shortly may come up for bids. Current talk about projects of this character however, does not appear to be founded on anything definite. In some circles it plainly is stated that there will not be any resumption of building operations as long as fabricated steel continues to cost around $100 delivered, New York. No one is pessimistic over the lack of demand for fabricated steel at present, however, since the fall and winter seasons always are dull in the structural field.

The opening of bids next Monday on the steel for the proposed government armor plate plant at Charleston, W. Va., is looked forward to with interest. Alternate bids on steel construction are to be taken in connection with the 20 towers to be built at Monroe, N. C., on which bids recently were taken. The bids previously taken were on brick construction with steel superstructures. In case the towers are entirely of steel, about 12,000 tons, it is estimated, will be required.

Demand for plain structural shapes is quiet, although there are some exceptions. One consumer, for instance, is anxious to buy 1200 tons for immediate delivery but is having difficulty in obtaining a promise of such quick treatment from the mill with which it desires to place the order. On the whole, domestic business is of very small proportions. There is a considerable amount of inquiry for shapes for export. Of this business the prices quoted range from 3.50c to 3.75c, Pittsburgh.

Business Extremely Quiet

Pittsburgh, Dec. 3.—Demand for shapes has fallen to extremely small proportions, for while there is no lack of agitation that necessary construction should be started immediately, there is no apparent hurry on the part of either public or private interests to act. The matter of prices apparently is the stumbling block. New construction means a long time investment and the structural business must be viewed from a very different angle from other steel distributing channels. Interests planning a 5000-ton building, for instance, could not expect full deliveries short of six to eight months and if after the order for the steel was placed, prices declined, the building would show a loss to the owner before it was up. In other lines of steel, a quicker turnover usually is possible.

Building Not Active

Chicago, Dec. 3.—Sufficient time apparently has not passed to bring out the heavy demand for structural shapes which might have been expected when building restrictions were removed. This is due in part to the season and also to the present high price compared with former levels. Bids were opened recently on the Michigan boulevard improvement across Chicago river, three contractors submitting figures, which were fairly close. This involves about 8700 tons of structural steel. No award has yet been made.

Small Jobs Appear

Cleveland, Dec. 3.—Several structural projects of moderate size have appeared on the market. One of these involves about 500 tons for a new plant for the Cleveland Copper Products Co., in this city. Openhearth extensions for an Erie, Pa., plant represent 250 tons. Some figuring is being done but generally prospective buyers are hesitating because of the unfavorable season and out of hope for lower prices.

CONTRACTS PENDING

New plant for the Cleveland Copper Products Co., Cleveland, 400 to 500 tons, bids being taken.

More Activity

Shown by Wire Mills as Shipments Are Enlarged

Pittsburgh, Dec. 3.—A more liberal supply of steel has permitted some expansion of operations of the wire mills, one independent Pittsburgh company, whose wire department at one time was down to about 35 per cent of capacity, now running up close to 60 per cent, while the leading interest has increased operations about 5 per cent in the past fortnight. New business is not coming in at all freely from domestic sources, but old orders that were on the books are holding and are being specified against, especially when prompt delivery can be made. A good and well diversified export demand for wire products and also rods is noted. A fair amount of export business is being worked and with the specifications against old orders is taking care of the increased production. The situation as yet shows no signs of weakness.

Jobbers Taking Nails

Cleveland, Dec. 3.—Wire nails are wanted by jobbers quite badly and a fair amount of business of this character is being done. There continues to be some call for barbed wire from the jobbers. The manufacturing trade continues to place orders for plain wire for 60 to 90 days ahead. This business is based on present prices but some companies are selling with the provision that the market price in effect at the time of delivery shall prevail. Wire mills in this district are operating on an increased scale since they now are utilizing for their own purposes steel which formerly was diverted to producers of vital war work.

Bars Wanted for Auto Trade

Material Sought by Builders and Parts Manufacturers for Early Delivery—West Expects Heavy Demand—Export Inquiries Continue

Cleveland, Dec. 3.—Automobile and automobile parts manufacturers continue to place considerable tonnage for bars to cover large manufacturing programs which they now are undertaking. This material principally is for early delivery. A parts manufacturer in this city who inquired for 1000 tons of bars satisfied this requirement by applying it against an order with a mill for war material. Both the cheaper and the higher-priced car builders are participating in the present buying. In this connection the cheaper car manufacturers have decided to very materially reduce the number of designs and types of machines which they have been marketing in the past. One of them has cut down the number from 15 to 2. This is along the line of the efforts toward the conservation of material during the war period which were promoted by the government.

Still Produce Shell Bars

Chicago, Dec. 3.—Although the necessity for further production of munitions seems to have passed, orders for shell steel have not been cancelled by the government to the extent that had been expected. Mills in this district are still turning out shell bars and it is understood these will be machined and finished for shipment to repay France and England for munitions loaned before our own plants could furnish them. Some progress has been made in altering specifications on steel for the French government, which was first specified as shell bars, but now will be furnished in plates, structurals and other peace forms.

As a general proposition, consumers are buying freely of finished steel for nearby delivery, but are not yet willing to contract for first half. Producers see a heavy demand from domestic sources, and there is no question of the immense tonnage which will be required abroad. Mills are operating at full speed and have plenty of fuel. No important cancellations have been made but some requests for delay are being received and many changes in specifications are being made to fit altered conditions. The market is almost entirely devoted to spot business, with specifications accompanying the order. Consumers as a rule exhibit no hesitation in buying what they need for immediate use.

Bar iron makers are meeting considerable export inquiry on which contracting is being done, but this business seems to be lessening as it becomes possible to obtain steel with less difficulty. Domestic business in bar iron is practically all of the spot variety and comparatively few contracts for delivery next year are on books.

Practically no demand exists for hard steel bars rerolled from rails and most mills are operating at much less than capacity. The situation as to old rails for rerolling is exactly reversed and where mills recently were selling only as many bars as they had rails on hand, at present they are buying only as many rails as they need for bar orders on their books.

Demand is Moderate

Pittsburgh, Dec. 3.—New business in merchant steel bars is not particularly heavy and the mills are not being forced in getting out the tonnages that are required. Buyers are not cancelling old orders; in fact, they are specifying fairly freely against such contracts, especially with those producers who can guarantee fairly prompt shipment. The impression that prices possibly may be lower after the turn of the year, coupled with the desire to keep down the size of inventories, tends toward caution in the matter of purchases beyond the end of this month.

Good Export Inquiries

New York, Dec. 2.—Makers of both steel and iron bars are receiving numerous inquiries from abroad. In most cases small lots are wanted but they comprise a considerable tonnage in the aggregate. The largest steel bar inquiry which now is out, involves 1000 tons for Japan and it is regarded likely that this will be consummated shortly. As a rule, soft steel bars for export are quoted at 3.50c, Pittsburgh. Shell discard bars are quoted at 3.25c, Pittsburgh, for export. For refined iron bars for shipment abroad, the mills are asking 4.25c, or the same as the present maximum price on domestic business.

Demand Appears for Export

Buffalo, Dec. 3.—Current bar demand is more active. There are a good many inquiries for hot rolled material. The bar demand for export has shown a considerable improvement. It is coming from allied countries rather than neutral.

Heavy Demand Continues

Chicago, Dec. 3.—Manufacturers of bolts and nuts find demand is excellent for their product and orders are being booked continually, coming from general sources, practically all users being short and desiring to fill out their assortments.

Old Orders Are a Backlog

Pittsburgh, Dec. 3.—Orders for cold rolled shafting which have been on the books of the manufacturers for some time, now are forming a backlog against the cancellations incident to the ending of the war. These old orders are being specified against when assurance of prompt delivery can be given.

Seek Semifinished Steel

Active Demand Develops at Pittsburgh for Sheet Bars—Open-Hearth Stock Offered Sparingly—Skelp Inquiry Not Covered

Pittsburgh, Dec. 3.—Active demands are being made upon the steel manufacturers for all kinds of semifinished material, especially from the middlemen who seem to have an outlet for supplies that the manufacturers themselves did not know existed. Demand for sheet bars both on the part of brokers and the finishing mills especially is brisk. The sheet industry seems to be making a more rapid recovery to a peace basis than most other lines of steel; hence, the brisk call for bars. Bessemer sheet bars are fairly plenty and some of the valley producers also are getting out fair sized tonnages of open-hearth bars. The leading interest, however, is offering open-hearth bars sparingly as yet, for while suspension has been ordered on the big order for French rails, cancellations have not yet been received and there is some hesitancy about diverting the rail capacity into other lines. An inquiry for 10,000 tons of skelp for export to Scotland has been on the market lately, but apparently no one is in a position to accept this business. Offerings of billets on the open market still are rather scant. Supplies of slabs have not increased much and it is not easier to pick up tonnages of wire rods now than it has been for some time past.

Shipping on Old Orders

Pittsburgh, Dec. 3.—Cancellations of orders for cold rolled strip steel that have come to manufacturers since the signing of the armistice, to a considerable extent, are being counterbalanced by shipments against old orders. Only a few attempts have been made to cancel such business. New business, however, is moderate, as buyers have the fear of lower prices and specifications against old contracts are supplying their most urgent requirements. Most companies have enough old business booked to carry them into the new year and it is believed that by then, the automobile makers will be seeking tonnages. Some difficulty is reported in getting sufficient supplies of billets and production of strip steel is not expanding at all rapidly.

Billets for Italy

Philadelphia, Dec. 3.—Among a few recent allocations are 10,000 tons 8 x 8-inch soft rerolling billets for the Italian government to a western mill. Several sales of forging and rerolling billets to domestic consumers are reported.

Inquire for Quick Shipment

New York, Dec. 2.—Several consumers in this district have put out inquiries for semifinished steel. Among them are two from New England consumers for 1000 tons and 2000 tons respectively, of small rerolling billets. This steel is wanted for quick ship-

ment. In fact, none of the consumers here are desirous of buying for the future under present conditions. Semi-finished steel can be had from a number of mills for quick shipment but others still have a great deal of rush tonnage on their books and can make no promises on new orders.

Sheet Bars Are Sold

Cleveland, Dec. 3.—Considerable tonnage of open-hearth sheet bars for delivery over the first half of 1919 has been disposed of the past week by prodcers in this territory who have had much tonnage for this purpose released by the cancellation or suspension of shell steel orders. These sheet bar contracts have been closed on the basis of present prices and are not subject to market change. A local buyer who was negotiating for 500 to 1000 tons for quick delivery is understood to have closed. The English government has suspended a considerable tonnage of shell steel with local mills and some of the other allies have taken similar action. In one case a tonnage of billets and semifinished forms was substituted for the quantity of shell steel revoked. Forging billets are being offered for quick shipment. A considerable tonnage of electric steel which was under contract with a gunmaker in this district has been cancelled owing to the government having annulled its order with the latter. This has released a liberal amount of electric steel for the market and producers now are seeking orders of this character.

Release Large Tonnage

Youngstown, O., Dec. 4.—Government shell-steel contracts among valley makers have been cancelled liberating many thousand tons of open-hearth steel for commercial rolling. It is understood all shell steel finished or in the process of rolling at the time the cancellations were received will be accepted by the government and that disposition of all stock intended for shell steel purposes will be made later. All government orders for this material have been blotted off the books. One noticeable effect of the cancellation is that open-hearth sheet bars are now available for commercial use and several good-sized sales have recently been made. Consumers are buying only such tonnages as are covered by orders. Only light sales are noted from the jobbing trade. Producers expect the demand for sheet bars to become more brisk after the holidays.

Quiet Market

Prevails in Tin Plate Due to Season —Export Inquiry Out

Pittsburgh, Dec. 3.—As is not unusual at this time of the year, trade in tin plate is quiet. Current business runs to miscellaneous needs that are neither large nor pressing and are easily met. Makers have not yet opened their books for first half of 1919 business and do not appear to be in a hurry to do so, pending a more orderly state of affairs in the general steel situation. Some export inquiry is current. There is a good sized inquiry from China now before producers in this district.

Stop Railroad Plate Orders

Orders to Suspend Work on Contracts from Railroad Administration Reach Cleveland Mills—Export Demand Continues

Cleveland, Dec. 3.—Local plate makers have received instructions to suspend shipment on the unfilled portions of orders for material for car orders for domestic roads placed by the United States railroad administration. This tonnage was entered on the mill books sometime last summer and considerable of it already has been shipped. These instructions to suspend came as a surprise to the plate makers and they duplicate similar suspensions recently received by Chicago mills. It is believed in some quarters that these suspensions are only temporary and in some earlier instances releases have been given. A small lot of buying is continuing from various sources but buyers usually are acting cautiously. Prices exhibit firmness though it is reported that in some territories sheet makers have not been adhering rigidly to the standard classification where that product and plates overlap.

Export Demand Brisk

New York, Dec. 2.—Foreign inquiries involving many thousands of tons continue to flow in upon plate makers. On most of this business the prospective buyers show no haste to close. Views of the mills on prices for export vary considerably. Some mills are quoting between 5.00c and 6.00c, Pittsburgh, while others will do as low as 4.00c, New York.

Mills Are Kept Busy

Philadelphia, Dec. 3.—While a few plate mills in various parts of the country can take on some tonnage for fairly early delivery, most have so much business on hand that they are indifferent to new business. One eastern mill having all it can do for next eight or nine months took orders for more than 12,000 tons, part for marine boilers and part for locomotive boilers and now is out of the market in expectation that prices will rise if government figures are discontinued. The only cancellations are those of British government which has followed cancellations of orders for other products by cancelling large plate tonnages recently allocated to the Lukens, Lackawanna, Central, Worth, Midvale and Alan Wood companies. One of these mills has accepted the cancellation. Another which had already started producing plates will accept cancellation but has put in indemnification claim of $10 per ton. The other mills have not yet taken action. The American Locomotive Co. is about to receive domestic locomotive contract to replace the Pershing locomotive order recently cancelled. Mills are exceedingly anxious to begin shipments to Japan on old high priced plate orders and assurances are given that license applications will be acted on favorably without delay. Showing the anxiety for plates in some quarters, one consumer offered to pay premium of $5 per ton on large tonnage for delivery before Feb. 1. It is likely now that Italian plate orders may not be placed for month or two. Not much plate export business has been placed although numerous feelers continue to come out.

Mills Not so Heavily Pressed

Pittsburgh, Dec. 3.—Plate mills are not being so heavily pressed for deliveries as they were recently and the supply situation is a shade easier although this change is more apparent than real, for the reason that some good sized export inquiries are cropping up and the ship and car requirements have changed only to the extent that there is not the urgency to the demand there was when the main thought in production was speed.

Demand Picks Up

Buffalo, Dec. 3.—A good plate demand has developed. One mill which had been shut down and under repairs for weeks will resume operation about the middle of the month on old tonnage yet unfinished.

Shipbuilding Not Slacked

Chicago, Dec. 3.—Although new tonnages of ship material are not being received in the volume which marked the earlier part of the year, mills are still engaged in producing and shipping plates up to their capacity. This condition is expected to continue over many months and no let-up in this respect is foreseen. Export demand is strong and as high as 5.50c has been bid for export plates.

Suspend Rails

Intended for France but Expect Tonnage to be Diverted

Pittsburgh, Dec. 3.—Suspension of work of the 168,000 tons of rails for export to France, on which the Carnegie Steel Co. has been working, has been ordered from Washington. No definite cancellation of the order, however, has been received and pending such an order, the company has only slightly reduced the operations of its rail mills. There is the possibility that the order will not be cancelled, for some time ago the railroad administration permitted a large tonnage intended for the national roads to go to France and this production may be diverted to domestic uses. Matters with regard to prices for rails apparently are not progressing with much rapidity in Washington, at least no word of settlement of the matter has been received here. Fair demand exists for light rails and small spikes in connection with coal mine operations, but only hand-to-mouth buying of large spikes is observed. Railroads are said to be showing more disposition to resume the practice of placing blanket orders for spikes and specify against such orders. Some makers, however, are refusing such offers, preferring to keep the business as it now is, or filling wants as they arise.

Seek Sheets For Export

Buyers in Foreign Countries Seek Heavy Tonnages—Export Licenses Easily Obtained But Vessel Shortage Precludes Shipment

Youngstown, O., Dec 4.—Export inquiry is commanding the attention of nearly every sheetmaker in the valley. Almost every mail brings inquiries from buyers in South America, Australia, Japan and European countries who are in need mostly of painted corrugated and galvanized grades. Shipments are free to western countries and no trouble is experienced in obtaining export licenses. The latter is also true for material billed to South American and European buyers. It is said 300 export licenses for sheets were issued daily during the greater part of last week. In spite of this fact, however, few shipments for South America and European countries are being made by valley makers on account of the scarcity of bottoms. Railroads here refuse to move export material bound for eastern ports unless the shipper guarantees that reservation has been made for the material on board ocean-going carriers. Most of the latter plying between the United States and European and South American countries are still engaged in transporting essential products and hence little space is available for other than this material.

Nevertheless, a few export buyers are willing to pay storage on their sheets at eastern ports in this country provided the maker can get the material there. However, in order to avoid a recurrence of last winter's blockade at eastern points, the government has requested that dock and storage space be kept open there. Thus export buyers can entertain little hope in getting their material even that far until the possibilities of obtainng bottoms become a little more promising.

The cancellation of government shell-steel contracts has made sheet bars more plentiful here. While the market has not reached its old-time sway, still good-sized tonnages are changing hands. There is still some tendency indicating that domestic buyers are uncertain of future market conditions. Whether they are holding off in view of next quarter price fixing or whether they are looking forward to inventory is a matter of conjecture. As to the former view, makers express the opinion that present prices either will prevail or they will go higher. With the present labor wage and $51 sheet bar, few sheet mills here could afford to operate should there be a reduction in the price of sheets after the first of the year.

Domestic inquiry while not coming out as freely as a week or two ago, is reaching the valley in fair-size quantities.

Export Demand Heavy

Chicago, Dec. 3.—Sheetmakers find export demand for their product unusually heavy but under present regulations as to licenses it is not possible to book the business which is offering. At present a premium of $20 per ton is being quoted on export business but this is not a bar to free buying wherever the material can be booked. Domestic demand is fairly heavy for immediate delivery, but buyers are not inclined to place their requirements for first quarter, evidently preferring to wait for possible decline in prices.

Active Demand is Noted

Pittsburgh, Dec. 3.—Active demands are coming to the makers of sheets and their problem continues to be not one of business, but of keeping all who want supplies satisfied. Automobile manufacturers continue to ask, plead and actually hound makers for deliveries on old orders, but to no avail, for automobile requirements run almost exclusively to open-hearth steel and the supply of this class of sheet bars is not so much larger than it has been. While valley producers are getting out somewhat larger tonnages, the Carnegie Steel Co., having received no definite cancellation of the French rail order, has not yet substituted sheet bars for rails at its Edgar Thomson works. Until the supply of open-hearth sheet bars is larger, therefore, requirements for automobiles must of necessity be delayed. Business on the books of the leading interest is sufficient to keep its plants busy for the next four months at 85 per cent of capacity, and as yet the mills are not doing 70 per cent. Beside the fact that bars still are far from plenty, it has been no simple matter to gather together the working organizations broken by war conditions. The current demand is surprising to the makers in that it is coming from unexpected sources. The building trade is looking for tonnages of roofing material and metal lathes, while there is a strong demand from the makers of stoves and ranges.

Export Demand in East

Philadelphia, Dec. 3.—Interests in sheets continues mostly from export standpoint. Galvanized for export has sold at 7c. Blue annealed has sold for export at 4.75c Pittsburgh and No. 28 black is quoted for export at 5.75c to 6c, Pittsburgh.

Resale Lots

Of Some Ferroalloys Continue to be Marketed at Concessions

Pittsburgh, Dec. 3.—Users of ferroalloys still are moving cautiously in the matter of fresh purchases and the turnover is extremely limited. Immediate needs of 50 per cent ferrosilicon are being met to a considerable extent from tonnages coming back on the market as a result of cancellations or of suspended shipments and these resales are taking place at considerably lower prices than makers are prepared to quote on new business. Thus while the furnaces are quoting a range of $150 to $155 a ton, delivered, the price on resales generally is around $140. One Pittsburgh district consumer is offering three carloads of 50 per cent ferrosilicon, which on account of war order cancellations, he figures he will not need. A valley steel concern reports an oversupply of this alloy and is seeking bids on this surplus. Other offerings for resale include 1000 tons for a Canadian consumer, 20 tons, and 2 carloads by Pittsburgh district users. While new business is almost negligible at present, it is figured that by the middle of next month there will be a considerable increase in the demand, for there are few consumers who are not covered much beyond the first of February even with the tonnages they are able to pick up. Little new business is doing in the lower grades of bessemer ferrosilicon, but a resale of a carload of 10 to 12 per cent is reported at the government price, the seller being allowed a commission on the transaction. Few inquiries are coming out for ferromanganese. A sale involving between 250 and 300 tons of higher than 70 per cent metal has been made at $250 for immediate shipment. It is understood that this tonnage was moved in a trade deal, whereby the buyer took the alloy at this figure and gave in part exchange a tonnage of slabs and sheet bars. Hardly enough business has been effected in 70 per cent ferromanganese to establish prices, but for prompt shipment it is doubtful if buyers would have to pay much more than $245, the seller absorbing the freight. The market is almost dead on 16 to 18 per cent spiegeleisen. While nominally quoted at $75, furnace, spot or contract, the market is an untested condition.

Ferro Resales Appear

New York, Dec. 3.—Resales are beginning to feature ferromanganese and such business is reported at under $250. Producers are adhering to the $250 price but this is entirely nominal and untested. Resales also are occurring in 50 per cent ferrosilicon at $150 to $160. Spot Spiegeleisen is now generally $70 furnace for 16 per cent with differential of $3.50 per unit up or down. Spiegeleisen is very quiet.

Slow Movement

Shown in Pipe to Jobbers But Oil Trade is Brisk

Pittsburgh, Dec. 3.—New demands for pipe like those in several other finished steel lines, are held in check because buyers seem to believe that prices will be lower later on. Jobbers are not holding up shipments on old contracts and fair sized tonnages continue to move to the oil districts. Makers have practically abandoned the hope of business in pipe that was expected at one time when the government was considering the construction of a line between the Texas fields and the Atlantic seaboard for the carrying of fuel oil for merchant and naval vessels. Little or no increase in the production of buttweld pipe is observed as a result of the lifting of the restrictions on the manufacture of this line. The chief use for these smaller sizes of pipe is in buildings for the plumbing trade, and, as usual at this time of the year, such requirements and purchases are light. Old orders are the chief backlog for manufacturers.

Pig Iron Production at High Rate

Tonnage Produced Last Month is Best on Record for Month of November—Epidemic and Fuel Supply Still Interrupt Furnace Operations—Spiegel Production Shows Loss of 13,670 Tons

THE pig iron production of coke and anthracite furnaces of the country last month reached the largest total ever recorded in November. The effects of the influenza epidemic, and also irregular coke supply to furnaces in some sections are still being felt, however, and the November total fell off slightly compared with October. The daily average also shows a slight decline.

The total production of pig iron in November amounted to 3,350,282 tons, a loss of 132,110 tons compared with the October total of 3,482,392 tons, but an increase of 151,685 tons over the November, 1917, figure of 3,198,597 tons. The steelworks or nonmerchant furnaces produced 2,481,337 tons last month, compared with 2,581,251 tons in October a loss of 99,914 tons. The merchant furnace output showed a loss of 19,785 tons, the November production of these stacks being 792,760 tons, compared with 812,545 tons the preceding month.

MONTHLY PRODUCTION	1918	1917	1916
January	2,403,227	3,159,839	3,171,878
February ...	2,318,242	2,649,935	3,078,548
March	3,209,996	3,255,813	3,327,630
April	3,273,355	3,328,061	3,225,496
May	3,451,884	3,413,677	3,364,584
June	3,316,148	3,260,234	3,213,818
Total 1st half	17,972,852	19,067,559	19,381,954
July	3,408,584	3,337,442	3,221,127
August	3,378,479	3,238,970	3,197,838
September ..	3,413,223	3,140,742	3,208,041
October	3,482,392	3,296,286	3,508,180
November ...	3,350,282	3,198,597	3,317,805
Total 11 mos.	35,006,812	35,279,596	35,834,945
December ...	.....	2,885,380	3,184,178
Total 2d half	.....	19,097,417	19,637,169
Grand total	35,006,812	38,164,976	39,019,123

As November is a 30-day month, the loss in daily average production compared with October, a 31-day month, is only slight. Blast furnace operation were at the rate of 111,676 tons daily last month compared to 112,335 tons in October, a loss of 659 tons. The daily average for the year has now reached 104,811 tons, or 249 tons over last year's daily average of 104,562 tons. The steelworks furnaces produced 82,711 tons daily in November compared with 83,266 tons in October, a loss of 555 tons. The merchant furnaces showed a gain of 214 tons in daily average, their production being at the rate of 26,425 per day, compared with 26,211 tons in the preceding month.

Spiegel production in November amounted to only 33,178 tons, a loss of 13,670 tons compared with the October total of 46,848 tons. Ferro showed a gain of 1259 tons, the November production being 43,007 tons, and for October, 41,748 tons.

There were 359 stacks in blast on the last day of November, compared with 364 on Oct. 31, a loss of five. Four merchant stacks were blown in during the month, and five blown out, a net loss of one. Two steelworks furnaces were relighted and six blown out, a net loss of four.

The Woodstock Operating Corp., Anniston, Ala., blew out one of its furnaces on Nov. 16, for relining and general repairs. The work to be done on the furnace will take from 70 to 90 days.

The stack of the Zenith Furnace Co., West Duluth, Minn., was blown out on Nov. 14 for relining. This furnace has been running on the present lining since Jan. 20, 1915.

NOVEMBER PIG IRON

States	No. of stacks	No. in blast last day of month Nov.	Oct.	Total tonnage made Merchant	Nonmerchant	Totals Nov.	Oct.
Pennsylvania	162	137	140	249,120	1,015,198	1,264,318	1,313,441
Ohio	80	73	75	136,993	631,128	768,121	806,039
Alabama	45	31	31	107,204	87,583	194,787	206,470
Virginia	20	13	13	33,735	.....	33,735	32,974
New York	28	24	25	77,020	139,230	216,250	234,769
New Jersey	5	5	4	19,254	.....	19,254	13,434
Illinois	25	24	24	61,190	255,139	316,329	328,065
Colorado	6	4	4	37,467	283,751	321,218	326,498
Indiana	16	15	15				
Maryland	4	3	3				
Wisconsin	6	4	4				
Kentucky	7	4	4	42,343	41,098	83,441	80,321
West Virginia	4	4	4				
Tennessee	17	11	10				
Washington	1	1	1				
Georgia	2	0	0	28,434	28,210	56,644	61,185
Texas	3	0	0				
Minnesota	3	2	3				
Michigan	3	3	3				
Missouri	1	1	1				
Spiegel—All states	...	...	...	.....	.....	33,178	46,848
Ferro—All states	...	...	...	.....	.....	43,007	41,748
Totals	437	359	364	792,760	2,481,337	3,350,282	3,482,392

AVERAGE DAILY PRODUCTION

	1918	1917	1916	1915	1914
Jan. ..	77,523	101,930	102,319	51,333	60,634
Feb. .	82,794	94,641	106,157	59,521	67,450
Mar. .	103,548	105,026	107,343	66,009	75,534
Apr. .	109,112	110,936	107,517	70,484	75,383
May .	111,351	110,119	108,535	72,747	67,646
June .	110,538	108,675	107,127	78,998	63,486
July .	109,954	107,659	103,907	82,687	63,075
Aug. .	108,983	104,483	103,156	89,510	64,403
Sept. .	113,774	104,691	106,935	94,478	62,757
Oct. .	112,335	106,332	113,167	100,656	57,007
Nov. .	111,676	106,620	110,593	101,174	50,042
Dec. .	.....	93,077	102,715	103,278	48,236
Avg. ..	104,811	104,562	106,610	81,022	62,934

The new A furnace at the Steelton plant of the Bethlehem Steel Co., was lighted on Nov. 7.

The No. 1 furnace of the Wellston Iron Furnace Co., Jackson, O., will resume operations about Dec. 4. Connections being made to new hot blast stoves made it necessary to blow out this stack on Nov. 10.

A. S. M. E. Meeting

Brings Out Interesting Figures on Munitions and Shipbuilding

New York, Dec. 3.—Charles T. Main, president of the American Society of Mechanical Engineers, in his address at the annual meeting reviewed the technical work of the society and its committees and outlined the responsibilities which engineers must assume in reconstruction work. He urged employers to meet the labor trend by co-operation toward the formation of a federal labor administration. Mr. Main representing the American Society of Mechanical Engineers will sail Thursday with representatives of civil, electrical and mining engineering societies at the invitation of French Minister Miller for the purpose of aiding the French and Belgians in their reconstruction.

In recognition of the valuable services performed during the war, the society conferred honorary membership upon Charles M. Schwab and Orville Wright at the opening session. Mr. Schwab accepting the honorary membership, stated that in November 500,000 tons of shipping space were placed in commission and the total by the end of this year will be between 3,500,000 and 4,000,000 tons. He stated that 60 per cent of the ships and munitions delivered to the navy department since the war broke out and one-fourth the number of merchant ships furnished to the allies and our country, came from the Bethlehem Steel Co. He also said that 15,000 big guns had been shipped to France during the war period.

Contract Adjustments Are in Tangle

Improperly Executed Orders Are Not Binding on Government, Comptroller of Treasury Informs Secretary Baker—Legal Contracts May Supplement Those Loosely Drawn, But Valid—Courts to Decide Others—Government "Lenient"

WASHINGTON, Dec. 3.—Manufacturers holding government contracts for war materials are becoming more concerned over the question of contract adjustments than over termination of contracts. While termination must necessarily precede adjustment, the second step is regarded as the more vital, involving a multitude of questions which may lead to litigation. A serious phase of the subject is whether the so-called contracts a number of manufacturers made are legal contracts, or merely letters, telegrams, etc.

Comptroller of the Treasury Warwick, in an opinion to Secretary Baker of the war department, points out that the auditors of the departments will pass favorably on only such contracts as were properly drawn. These requirements are strict and many manufacturers who never dealt with the government prior to the recent war may find themselves confronted with a long series of negotiations and interpretations, possibly ending in litigation. It is expected, however, that because of the wholehearted response of the industries of the country, the government will be lenient in making settlements.

The question of adjustments was brought to the front last week when Comptroller Warwick made public his reply to a letter from Secretary Baker. For the first time a number of producers of war materials were brought face to face with the question as to the validity of their contracts. Many of the contracting officers, or those acting in that capacity for the government, and many producers never had occasion to execute agreements of governmental character until the war made hasty action urgent.

Will Not Approve Certain Orders

In the haste on both sides, it is believed, thousands of orders were filled without more authority than a telegram, a letter, or even a word from a purchasing officer. Mr. Warwick points out that such orders are not contracts. His auditors will not pass them for payment and it may be necessary for the courts to decide the question. Mr. Warwick's statement was in reply to a question of whether the war department could make supplemental contracts, cancelling the originals and making payment for work performed on the originals.

Mr. Warwick said that supplemental contracts in substitution for properly executed originals may be entered into by the government with producers. If the first agreements were properly executed, the war department may pay up to 75 per cent of a sum decided on by contracting officers as the minimum of the value of the work performed under the original contract. This is to give to the manufacturer at once sufficient funds to enable him to immediately begin commercial production. Meanwhile, adjustment of the contract as to the remainder due him will be carried out by special arrangement made by the department.

Benedict Crowell, director of munitions of the war department, yesterday announced that these supplemental contracts will be made with contractors where such new contracts are warranted. He said adjustments will be made by special boards created by the department and these boards will include special bodies in the ordnance districts of the country. The boards will be made up of industrial, legal and army officials, utilizing the mediums created by the various war branches of the government such as the ordnance districts, the war industries board's regional advisors, etc.

Settle Each Case Individually

The government still is of the opinion contract cancellations must be made in view of the labor and production problems growing out of the transition from war to peace. It is not contemplated to proceed with needless production of war materials, but it is held that the first consideration of industrial and labor conditions is more important and worth any effort and expense the policy might involve. It has been with this end in view that the various departments have been looking to demobilization of the war industries and the speedy return to peace-time production.

Problems arising from adjustment of contracts will have to be settled individually as each contract presents different conditions. Legal counsel for the contractors will have to thresh out these questions and others, which include the amount of profit to be allowed. The war department, with certain limitations, favors a 10 per cent margin, but Mr. Warwick points out these limitations involve many questions not self-evident.

Baruch Resigns; See End of Price Fixing

WASHINGTON, Dec. 3—The report that the activities of the war industries board will end Jan. 1 has gained strength by reason of the resignation of the board's chairman, Bernard M. Baruch, to take effect on the date mentioned. While the report has not been verified, it would seem, if it is true, that fixing of prices on iron and steel and other products has ended and will not be resumed with the expiration of the periods for which the prices were determined. In the case of iron and steel, the existing prices were fixed for the fourth quarter, ending Dec. 31. Certainty as to whether or not the war industries board will go out of existence at the end of the current year probably will not be established until the President accepts the resignation of Mr. Baruch and makes known his attitude as to whether the board will be discontinued. The President has power to suspend the functions of the board any time he may choose. Many of its duties have been fulfilled, others are being conducted on a limited scale, while still others have been transferred to old established branches of the government. An example of the latter is the turning over of the work of the chemicals division of the board in connection with a study of the potash situation to the department of the interior.

Government is Not to Undersell Producers

WASHINGTON, Dec. 3.—Chairman Baruch, of the war industries board, and Secretary Baker, of the war department, have announced that the government's accumulations of raw materials or finished products "will be distributed when and where the liquidation of such supplies will least interfere with the return of industry to normal conditions." This is regarded as a liberal policy, one which will keep the government from entering into competition with private producers.

Reduces Operations

The American Locomotive Co., according to an announcement made Dec. 1, by John A. Macgarvey, general manager of its Schenectady, N. Y., plant, has reduced operations at this plant to five days a week for an indefinite period, instead of six days as before. It was explained by Mr. Macgarvey that government orders for locomotives are coming in so slowly that it is impossible to dispose of the entire output of the plant when operating to capacity.

Reconstruction Congress in Session

Thousands of Nation's Business Men Meet in Atlantic City to Decide on Concerted Action for Readjustments—Department of Commerce to Submit Data Showing Great Demand for Iron and Steel in Europe

ATLANTIC CITY, N. J., Dec. 4.—Efforts to co-ordinate the ideas of business men on reconstruction work were begun Tuesday with the meeting of nearly 400 war service committees, called by the Chamber of Commerce of the United States. The widespread interest displayed was shown by the thousands of business men who have come from all sections of the country and have packed the hotels. The committees met first separately and later in the session will meet jointly in groups to make general recommendations to the government.

Addressing the convention on Wednesday Secretary of Commerce Redfield said: "Beware of the temptation hastily to lay hands upon wages. Concentrate thought, purpose and effort upon your output." The secretary declared that the country is at the commercial parting of the ways.

"There is no doubt, humanly speaking," continued the secretary, "that prosperity lies ahead for America, but there is yet an unsolved doubt as to what use America will make of her prosperity. If you can leave to your sons as they go about the earth the knowledge that America rose to a height of marvelous power, financial, military, political, industrial and economical, and she used that power to her own good always and also always for the good of the world, then your sons can walk as no German can walk, can travel the whole round orb of the globe, among friends knit to one another with bonds of esteem and affection which can not be broken."

Harry A. Wheeler, president of the chamber of commerce, announced that he had offered to President Wilson the services of representative men from American industries to attend the peace conference in France and advise with the delegates from the United States. The President made no direct reply to this offer.

"Failure to deal generously in the distribution of raw materials," said Mr. Wheeler, "will seriously impede the industrial restoration of nations not fortunate enough to possess basic materials of their own in surplus for trading purposes.

"A plan of rationing is not a function of the government exclusive of the aid and counsel of those expert in handling these commodities. Making the plan and carrying it into effect should be left to those who best know the processes of production and distribution, with only such government participation as may give official sanction to the plan and provide the regulation that will assure fair dealing and reasonable prices.

"Reconstruction cannot proceed under principles of just consideration for the needs of all nations except as those countries having ships available shall so far pool their tonnage as to make it of universal service. Happily the United States, with its ocean fleet increasing daily is in a fair way to set an example in this as in other matters involving international problems of reconstruction, and American business may well consider a memorial to our own government and through it to the peace conference, for the adoption of such plans during the period of reconstruction as will assure a joint control and distribution of overseas shipping to provide all nations with their immediate needs of food and with raw materials, and transport for their products."

The department of commerce is said to have evidence to place before the convention indicating that the iron industry in the devastated area of France and Belgium cannot be revised for some time, probably two years, and therefore iron and steel products of all kinds will be required of the United States for immediate reconstruction work in Europe. These products are likely to prove as vital as food and clothing.

The convention continues Wednesday and Thursday and the accredited representatives of 377 industries will take up all phases of reconstruction work and the benefit of their advice and counsel will be offered to the government through an industrial advisory federation to be created. This federation will speak through a small executive committee made up of the strongest men that can be found in industry.

Views Will be Welcomed

In a letter to the chamber of commerce President Wilson has declared that the government will welcome the views of business men in the transition from war to peace conditions. The organization to be created at Atlantic City will offer an opportunity for industry to express itself on these problems in concrete fashion. The program for the conference lists the following as speakers at the general session with the subjects which they will discuss:

Harry A. Wheeler, president Chamber of Commerce of the United States, "The Purposes of the Conference."

William C. Redfield, secretary of commerce, "Our Opportunity and Obligation in International Trade."

Benedict Crowell, assistant secretary of war, "Demobilization in Relation to Industry."

James A. Farrell, president United States Steel Corp., "Foreign Trade."

John D. Rockefeller Jr., "Representation in Industry."

Paul M. Warburg, former member federal reserve board, "Finance After the War."

Other speakers will be added to the program. For the purpose of facilitating discussion the war service committees will meet first as separate units, later in 35 groups, again in ten major groups, and finally in general session. The program for the major group meetings, in part, includes the following chairmen and speakers:

Major group No. 3—Iron and steel. Chairman to be selected. Speakers, Murray L. Sargent, chief hardware and tool section, war industries board; John N. Willys, Willys-Overland Co., Toledo, O.; Judge Edwin B. Parker, priorities commissioner war industries board; Thomas Ewing, New York.

Major group No. 4—Metals and minerals, other than iron and steel. Chairman and speakers to be selected.

Major group No. 7—Chemicals. Chairman, Horace Bawker, American Agricultural Co., New York City. Speakers, Dr. William H. Nichols, General Chemical Co., New York City; Charles H. McDowell, chemical division, war industries board.

Related group No. 4—Coal and coke. Chairman, J. D. A. Morrow, fuel administration, Washington. Speaker, Frank Peabody, Peabody Coal Co., Chicago.

Related group No. 7—Gas motors, automobiles, engines, etc. Chairman, David Ludlam, president Auto Car Co., Ardmore, Pa. Speaker, George N. Graham, Pierce-Arrow Co., Buffalo, N. Y.

Related group No. 8—Steel and iron production, rolled and drawn. Chairman, Arthur G. McKee, engineer, Cleveland. Speaker, William B. Dickson, vice president Midvale Steel & Ordnance Co., New York City.

Related group No. 9—Steel and iron products (fabricated or manufactured). Chairman, Thomas Earle, Bethlehem Bridge Co., Bethlehem, Pa. Speaker to be selected.

Related group No. 10—Iron and steel products (cast). Chairman, Frederick W. Herenden, Geneva, N. Y. Speaker, Samuel B. Bush, Buckeye Steel Casting Co., Columbus, O. Buckeye Steel Casting Co., Columbus, O.

Related group No. 11—Machinery, tools and power equipment. Chairman, A. O. Backert, Cleveland. Speaker, L. A. Osborne, Westinghouse Electric Co., Washington.

Related group No. 12—Hardware. Chairman, C. T. Asbury, Enterprise Mfg. Co., Philadelphia. Speaker, Murray L. Sargent, Sargent & Co., New Haven, Conn.

Related group No. 13—Building materials (except those otherwise specified). Chairman, Ernest T. Trigg, John Lucas & Co., Inc., Philadelphia. Speaker, D. R. McLennan, Chicago.

Related group No. 14—Farm operating equipment, agricultural implements, fences, etc. Chairman, C. S. Brantingham, Emerson-Brantingham Co., Rockford, Ill. Speakers, G. A. Ranney, International Harvester Co., Chicago; E. M. Parsonage, Deere & Co., Moline, Ill.

Related group No. 15—Nonferrous metals, brass and alloys. Chairman to be selected. Speaker, John H. Gross, Scoville Mfg. Co., Waterbury, Conn.

Redfield Has New Plan

Wants Advisory Committee of Business Men to Continue Work at Washington as Aid to Government and Industry

Washington, Dec. 3.—On the theory that war has taught business and manufacturing interests to be less afraid of government, despite occasional outbursts from the federal trade commission, Secretary Redfield, with the approval of the President, is considering creating an advisory committee of business men and manufacturers, composed at the start of division heads and section chiefs of the war industries board, which in all probability will cease to function on Jan. 1. These men are to keep the government and industries advised of each other's activities and to make the relations as harmonious in peace as they have been in war.

The plan of Mr. Redfield has not taken definite form, experts in war industries board only yesterday being called in for their advice on this subject. Development of foreign trade policy and expansion of industries and domestic needs to keep pace with it necessitates closer relations of the government and producers, is the opinion of Mr. Redfield, according to report. Immediate creation of such a committee as proposed would greatly accelerate this country's readjustment to peace footing, it is held.

Mr. Redfield left Washington tonight to attend the chamber of commerce reconstruction convention at Atlantic City and there may make public his ideas and call upon the war service committees for additional advice. Bernard M. Baruch is understood to favor the plan of Secretary Redfield. The department of commerce likely will take over much of the records and data compiled by the war industries board for future economic development of the country, although the war, navy, interior and labor departments will receive their share.

In this connection, the council of national defense today announced adoption of resolutions continuing practically all its present functions. The council was created before the war and continues as long as congress makes necessary appropriations. With its own and various state, county and municipal councils it represents 184,000 separate units and resolutions call upon governors and state legislatures to continue the bodies they have created.

Appreciates Lackawanna's Great Aid to France

Appreciation of the service rendered to his company and to France in providing ordnance and munitions for the French army is expressed in a cablegram received by President E. A. S. Clarke, of the Lackawanna Steel Co. from Monsieur Theodore Laurent, managing director of the Compagnie des Forges & Acieries de la Marine & d'Homecourt. This message was in reply to a cable of congratulations from Mr. Clarke sent on the day following the signing of the armistice. The Lackawanna Steel Co., next to the Schneider works at Creusot, has been the greatest factor in providing ordnance and munitions to the French army. Monsieur Laurent's cable which gives a glimpse of the devastated conditions in the industrial region of France, is as follows:

"I thank you for your cordial cable. I thank you and also all your staff, and through them, your whole country for your faithful friendship and for the powerful aid which you have given us. All our sacrifices are repaid by the results which have been obtained. I found your cable upon returning from our mills at Homecourt which I entered some hours before the American troops, who are occupying that region at the present time. I found our mills systematically devastated and pillaged by the German industrials, who had subjected the personnel remaining on the ground to the most severe humiliations. It is necessary that all this be known and made public, and especially that German industry and in particular the German metallurgical industry be put under the ban of civilization. Accept all best wishes and friendship.

"Laurent."

Operating More Mills

Two additional hot mills of the Farrell plant of the American Sheet & Tin Plate Co. were started Nov. 25 and it is hoped soon to have the entire plant in full operation, against the recent scale of about 50 per cent of capacity.

The Non-Ferrous Metals

Copper Lead Spelter Tin

	*Copper	†Spot Straits, tin	‡Lead, New York basis	Spelter St. Louis basis	§Aluminum	Spot antimony
Nov. 27	26.00	.....	8.05	8.40	33.00	8.62½
Nov. 29	26.00	.....	8.05	8.45	33.00	8.65½
Dec. 2	26.00	.....	7.05	8.45	33.00	8.62½
Dec. 3	26.00	.....	7.05	8.45	33.00	8.60

*Government fixed maximum price for prime lake, electrolytic and casting copper, in ingots, pigs, slabs, etc., less than carloads, 27.30c.

†No spot Straits tin offering.

‡Price agreed to by leading interest and independents.

§Government fixed price for 98 to 99 per cent ingot aluminum in 50 ton lots; lots 15 to 50 tons, 33.10c; one to 15 tons, 33.20c.

NEW YORK, Dec. 3—The lead producers' committee for war service on Dec. 2 announced a reduction in the price of pig lead from 8.05c New York, and 7.75c St. Louis, of 1c a pound or $20 a ton, to 7.05c New York, and 6.75c St. Louis. This is the first reduction to be made in any of the government controlled metals since the armistice was signed. No statement accompanied the announcement, but the committee let it be known it will continue to allot supplies of domestic lead until Jan. 1, at least. The reason for the reduction probably is that there has been a falling off in consumption and the committee, acting in the interest of the industry, is desirous of bringing the price to within reasonably normal limits. Today the committee added that regulation of prices on less than carlots was off. Thus, with part control off, and the price lower, the committee may prevent a break in prices when it further relinquishes control.

The market for lake and electrolytic copper is firm at the maximum price of 26c, which price is to continue until Jan. 1 and possibly beyond. There have been sales of casting copper, made from scrap, at prices ranging as low as 22.50c a pound, with 23c more commission. Some resale lots of electrolytic copper have sold at less than 26c. However, the major market is unchanged. Inquiry is light, but producers express confidence in the future of the market.

The tin situation shows little change. George Armsby, chief in charge of tin for the war industries board, has not yet replied to the plan submitted by the Tin Importers' association, with regard to control of tin distribution. The foreign market for tin has dropped rather sharply. Australian tin for January-February shipment now is offered at 63.50c, c. i. f. New York, but licenses are not permitted. Spot Banca tin is quoted 70c. Spot 99 per cent tin is offered at 69c. These prices are believed to be several cents a pound below the price which will be fixed by the war industries board on the tin which is being imported by the United States Steel Products Co., acting as agent. The prospects are that consumers of tin in this country will be asked to absorb all this tin at a minimum price before import licenses will be granted importers of tin and a free market established.

Spelter has shown a steady tone the past week, with inquiry light and supplies of nearby metal comparatively scarce. The weekly statistics of the geological survey, however, show an increase both in stocks and production, which render less favorable the statistical position of the market.

The antimony market has held to the higher levels attained following the sharp break of a few weeks ago. Domestic commercial consumers have taken advantage of the low levels to contract for at least part of their requirements.

The improved labor situation has been reflected lately in brass mill operations. Mills which a few weeks ago were unable to operate above 60 per cent despite the heaviest pressure from the government, now are operating at a greater rate than in years, one leading mill now running day and night shifts and averaging 85 to 90 per cent. Some cancellations have been received, but in general more pressure for deliveries is being exerted. Prices of brass and copper products are unchanged.

Blooming Mill Now Rolling Plates

Mill Originally Designed for Breaking Down Ingots is Rebuilt to Aid Rapid Transformation from Shell-Steel to Peace-Time Commercial Product—How Plan Was Worked Out

WHEN the Baldt Steel Casting plant at New Castle, Del., originally passed into the hands of the Penn Seaboard Steel Corp. in 1915, the latter company had large contracts for projectile steel for the allies. Accordingly, the Baldt works were provided with six open-hearth furnaces to produce shell-forging ingots. It was not until 1917 that the company, realizing the advantage of this location, decided to erect a plate mill in order to provide an outlet for its steel after the demand for munitions no longer existed. Not much investigation was required to demonstrate that under the conditions prevailing at that time, the erection of a brand new plate mill would have involved an extended and indefinite period, so that the company, being unwilling to abandon its plans, but desiring to cut delay to a minimum, finally decided to do an unusual thing. This was its acquisition, in January, 1918, of the 34-inch blooming mill which originally was built for the Chattanooga Steel Co., but never erected. The mill was not delivered until May. The conversion of this mill into an 84-inch plate mill, brought up numerous problems which as a rule are not encountered in the establishment of a plate mill.

One of these was the necessity for changing the screw-down arrangement, which in a blooming mill operates at much greater speed than is permissible in a plate mill. The screw-down now is operated by two 80-horsepower motors. When operating in series, the vertical movement is at the rate of 15 inches per minute, and when operating in parallel the rate is 30 inches per minute. Upward movements are made by the motors in parallel, but downward movements, excepting during the breaking down and roughing passes, are accomplished in series, the change being made by means of a switch. As redesigned, the worm gears are in housings which protect them and facilitate lubrication; the housings have extensions which protect the spindles. The reduction gears also are enclosed. The screw-down arrangement is adjustable in two ways. One adjustment may be made on the worm gear shaft while a second, by means of an adjustable breaker, may be made to the rolls without stopping the mill. The screw-down indicator is located on the side of the housing away from the pinion and is 6 feet above the floor level. The inch scale is in the form of a dial and the fractional scale in the form of a drum.

Two entirely new plate mill tables had to be built, each driven by a 100-horsepower motor which belonged to the blooming mill equipment. These tables have a surface speed of 450 feet per minute. The original receiving and bloom shear runout tables now serve as the approach to the straightener, having been widened sufficiently to accommodate the product of the mill. The distance between the mill and the straightener is 127 feet, which tends to facilitate production. The straightener approach table is in two parts which are operated independently by 40-horsepower motors. That portion nearest the mill can be operated at a surface speed of 450 feet per minute, while the other portion travels at the rate of 250 feet. The straightener runout table is operated by a 40-horsepower motor and travels at the rate of 250 feet per minute. In fact all tables over which the plates pass after leaving the straightener are designed for a surface speed of 250 feet. The plate mill receiving table is equipped with a 40-horsepower motor and has a speed of 450 feet.

A 100-horsepower motor drives the plate straightener, while the straightener screw-down is actuated by a 12-horsepower motor. Other equipment includes a 96 x 1-inch gate shear which is operated by a 50-horsepower motor. The rotary shear is of a modern type which heretofore has been installed in only a few plate mills in this country. It is driven by a 100-horsepower motor, while the housing shifter is operated by a 12-horsepower motor. This machine has capacity for shearing plates to a maximum of 100 inches wide and 1-inch thick. The slitting shear for side trimming has capacity for 132 x 1½-inch plates and is driven by a 75-horsepower motor. For weighing

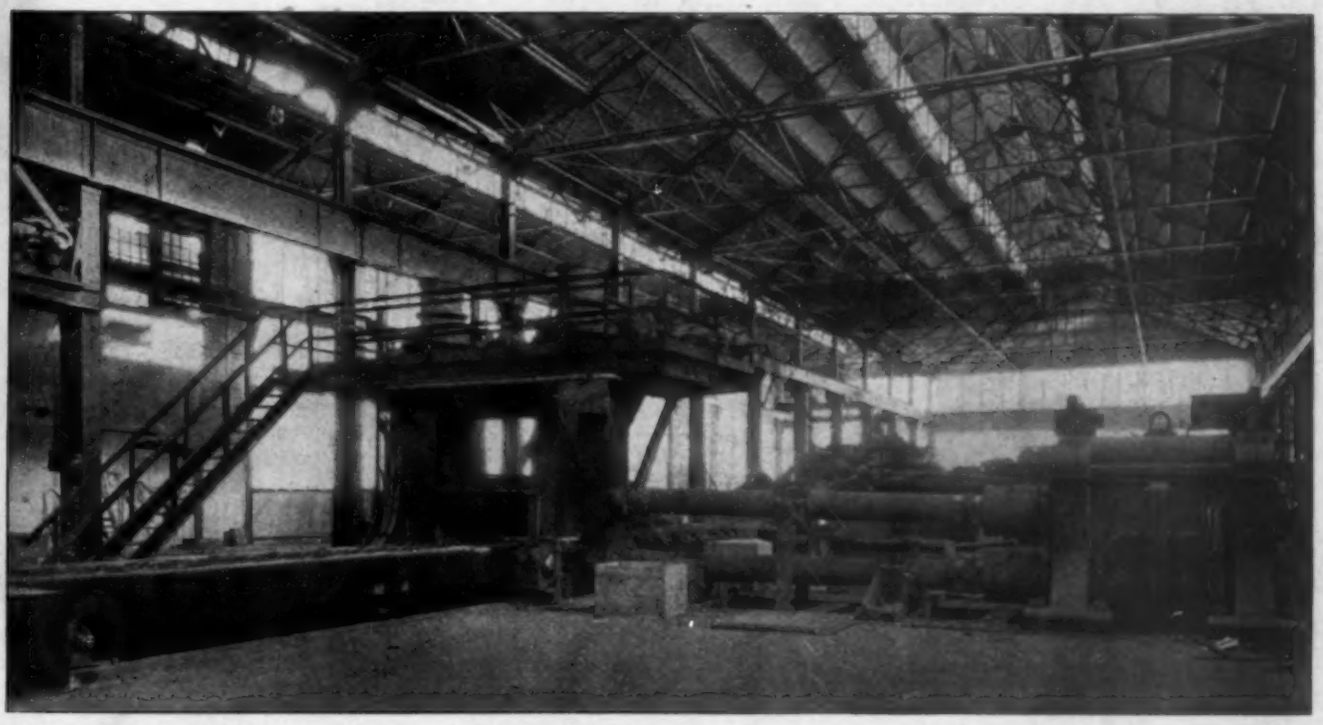


FIG. 1—NEW 84-INCH PLATE MILL, JACK SHAFTS, PINION HOUSING AND RUNOUT TABLE—MILL IS DRIVEN BY A 1500-HORSEPOWER REVERSING MOTOR

FIG. 2—RUNOUT TABLE LEADING TO STRAIGHTENING ROLLS—ALL TABLES ARE EQUIPPED WITH ROLLER BEARINGS HAVING ADJUSTABLE SOCKETS
FIG. 3—CASTORS ARE ALSO EQUIPPED WITH ROLLER BEARINGS BOTH IN THE WHEELS AND NECKS

the product, a 10-ton plate scale, remodeled to match the castors, has been installed.

Although the mill first produced plates on Oct. 30 and has been in steady operation since, its equipment probably will not be completed before next May. Included in the work on which efforts now are being concentrated is the erection of a chain conveyor. This will be 150 feet long, and will have four chains, 16 inches center to center. It will be equipped with rollers having 5-inch diameter, 4-inch face and 18-inch pitch. It is to be driven by an 80-horsepower motor and will have a surface speed of 120 feet per minute. The motor which will drive this conveyor originally was a part of the equipment of the blooming mill. The chain conveyor is expected to be completed well before the end of the year.

Included in equipment still to be built is an inspection table. This will be provided with two 40-horsepower motors, one to drive the table and the other to operate the inspection fingers. The table will have a surface speed of 250 feet per minute. A chain transfer is to be built, consisting of two tables, each to be operated by a 40-horsepower motor. The diameter of the rollers is to be 12 inches and they will be spaced to 3-foot centers. The speed of the chain is to be 50 feet, giving the plates a movement of 100 feet per minute. Each of the two chain raises are to be operated by two 12-horsepower motors. The rotary shear approach table, which will be equipped with a grip to hold the plates in position, will be driven by a 40-horsepower motor. This table is to have three cross-overs for clinching the plates against the blade-grip. The rotary shear run-out table will have a 40-horsepower motor. The gate-shear approach table is to be driven by a 40-horsepower and the straight-edge by two 12-horsepower motors. The run-out table for the rotary shear is to be operated independently from the gate shear approach table, thus facilitating production. The castor stands about the shears, which already have been set up, are spaced to 22-inch centers. For cutting up scrap, three alligator shears are to be installed.

The 2-high mill, which is located in a 66 x 1320-foot building, is equipped with 84-inch rolls. Plates up to 72 inches wide and 1 inch thick can be rolled. Its capacity is expected to be 125 tons in 12 hours. The mill is driven by a 1500-horsepower, 720-volt, direct-current, reversing motor, having a maximum of 75 revolutions per minute. The motor is cooled by air which passes through an air washer. All other motors in the mill equipment are 230-volt, direct-current. All electrical control throughout the installation is of the remote type, which promotes safety and prevents damage to the equipment.

Among the modern features embodied in the construction of the mill is that all tables and line shafts and the castor stands are equipped with roller bearings of the Hyatt type. The single exception is the straightener approach and run-out tables, which are the original blooming mill receiving and bloom-shear run-out tables and hence have bushed bearings. The roller bearings on the tables are housed in a self-aligning box which prevents damage to the bearing and relieves the table structure from all strain thrown upon it by bent table rollers. This is the most modern construction and represents the first of 12 Hyatt-equipped plate mills now building and almost ready to go into operation. The castor bed contains 1000 castors which have roller bearings in the wheel and in the castor neck. This makes it possible to move the heaviest plate with the minimum of labor because the castors can easily swing around to the direction in which the plate is moving, thus eliminating the drag which occurs in the use of the old type of castor. In addition to the saving in labor, this castor permits of more rapid handling of plates at the shear because they are more rapidly brought into position.

Electric current consumed at this plant is obtained from a local service company. It comes in through two cables, so that in case of trouble on one line, the plant may depend on the other. The current comes in at 11,400 volts, 60 cycles and is passed through a bank of three 1000-kilovolt-ampere, 60-cycle, single-phase, outdoor type transformers which reduce the voltage to 2300. From the transformer station the power is conveyed to the mill substation by underground cables. In the mill substation one branch feeds the motor generator and exciter sets. The former has 1500-horsepower and a maximum of 350 revolutions per minute and is provided with a 60,000-pound fly-wheel. Another branch passes through a second set of transformers, being stepped down to 187 volts, after which it is converted to direct current at 250 volts. This branch then ties up to a panel which feeds the various mill auxiliary motors. A third branch passes through a 200-kilovolt-ampere, 60-cycle transformer and is reduced to alternating current at 115 volts, after which it ties up to the lighting panel. The plant is illuminated by 500 and 750-watt lamps which in the mill are spaced to provide about 5 candlepower per square foot. To serve in emergencies, each panel house is equipped with a spare panel.

The plate mill is fed with bottom-cast slabs obtained from the open-hearth department. The latter comprises six 30-ton basic furnaces. At the present time oil is being used as the fuel owing to the difficulties which have been encountered in obtaining a supply of coal. Later producer gas again will employed as the fuel. The output of these furnaces now ranges from 7500 to 8000 tons per month. From the open-hearth department the slabs are taken to the plate-mill building where they are placed in soaking pits located near the receiving table of the plate mill. The soaking pits are two in number and are oil-burning. Later two 4-hole, gas-fired, soaking pits will be added. For moving ingots and charging boxes, the company operates a locomotive and cars equipped with roller bearings of the Hyatt type.

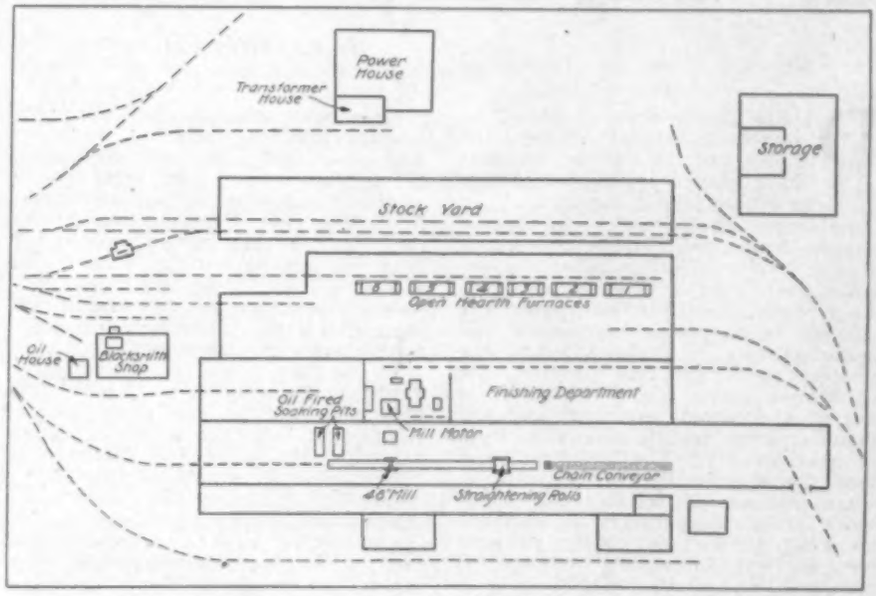


FIG. 4—PLAN OF BLADT WORKS OF PENN SEABOARD STEEL CORP., NEW CASTLE, DEL.

A feature of the mill substation, which houses the mill motor, the motor generator and flywheel set, exciter, panels for controlling mill drives, circuit breaker, air washer and fan for cooling the mill motor, and other equipment, is equipped with a gravity lubrication system. The oil is fed to the machinery as required from an overhead tank; after being used it flows to an oil filter through which it passes. It then is pumped back into the tank.

The mill substation is housed in a 66 x 100-foot building. Other buildings include a 66 x 180-foot machine shop, a 40 x 80-foot blacksmith and forge shop, an oil pump house and storage, a powerhouse and a storage yard. The machine shop is equipped with large lathes and other machinery necessary for repairs and upkeep. The blacksmith shop is equipped with eight hand forges, an oil-burning, 8 x 10-foot heating furnace, and a 1500-pound steam hammer; later a 2500-pound steam hammer will be added. This department is used for forging tools, plate tongs, etc. The oil pump house

contains one electrically and one steam-driven pump which are used alternately. Fuel oil is brought to the plant by rail or up the Delaware river by barges and is pumped into a storage tank having capacity for 300,000 gallons. Present consumption is at the rate of 12,000 to 15,000 gallons. With the removal of difficulties attendant on coal deliveries, producer gas will be used instead of oil.

The power-making equipment, which has capacity of 400 kilowatts, is employed for furnishing current for the operation of the cranes and is provided with a switch so that if the power temporarily is disabled, the cranes may be operated with current supplied by the mill substation. In the plate mill department, two 25-ton cranes command the mill bed, one 10-ton crane the finishing end, and one 10-ton crane the soaking pits. The mill substation is equipped with one 30-ton crane. The pit floor in the melting department is commanded by four 30-ton cranes. One 25-ton crane commands the machine shop. A 15-ton crane, 65-foot 3-inch span and 500 feet long serves the raw material storage yard.

Shipping Facilities

Shipments of plates are loaded into cars which enter the finishing end of the plate shop on depressed tracks. Similar depressed track connections serve all other buildings in the plant. The plant is equipped with a chemical and physical laboratory. Located on the Delaware river, the company obtains all of its water from that source excepting that required for drinking and for the boilers. The Baldt works of the Penn Seaboard Steel Corp. are in charge of C. E. Middleton, vice president of the corporation. The engineering work, connected with the necessary changes and installation of the plate mill, was done by Mr. H. H. Schmid, chief engineer of the plant. The electric drive was built by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. The auxiliary motors and panels were furnished by the General Electric Co., Schenectady, N. Y., and the installation of the cable and switches was done by Hatzel & Buehler, Inc., New York, under direction of the company.

How Slag Temperatures Affect Firebrick

BY RAYMOND M. HOWE

DURING the present period of intense industrial activity, the linings of the various furnaces have played an important role in determining their capacities. In some cases the firebrick of special shapes have given long continuous service, while in other cases the results have not been as satisfactory. As a result, there has been some discussion between the consumers and manufacturers of firebrick as to the relative merits of this product, the consumers often claiming that it is not of the prewar standard and the manufacturers maintaining that it is of equal quality. The latter maintain that the shorter life of refractories, when encountered, is often due to the more severe duty which is imposed upon this product during the struggle for an ever-increasing output of metals.

The work here presented was carried out for the purpose of determining the action of various slags at different temperatures on several standard brands of firebrick. The data secured would therefore appear to bear directly upon the question at issue, for it is well known that a common means of increasing production consists of increasing the working temperature.

The general plan was to secure bricks of recognized quality and to test the action of several slags upon them at different temperatures. The method used for determining this action was essentially the same as is used by the Carnegie Steel Co. At that laboratory a brick is heated to a definite temperature and 35 grams of slag are placed in a cavity at that temperature and are allowed to act for two hours.

Before adopting this method certain points were checked pertaining chiefly to the influence of the time of action, and the quantity of slag used, upon the results secured. Tests were made in which the time and slag were trebled, but this procedure failed to produce a more pronounced action upon the cavity in the brick.

A paper presented at the meeting of the Refractories Manufacturers' association held at Mellon Institute, Pittsburgh, Nov. 20, 1918. The author is an industrial fellow of the Mellon Institute.

In reporting the results, the total cross-section of the slag saturated area was first measured by means of a planimeter. The area of the original cavity was then subtracted from this. The difference represented the area of the section which had been penetrated by the slag. This area when divided by the linear surface of contact gave a value which represented the square inches of penetration per inch of contact.

The results given in Table I confirmed those reported by Nesbitt and Bell and lead to the same conclusions, that is, when a brick having a cavity 2½ inches in diameter is treated with 35 grams of slag and it is allowed to react for two hours satisfactory results are obtained. In the preceding work 35 grams of slag reacting for two hours resulted in a penetration value of 0.64. When the severity of this test was increased 600 per cent, the penetration factor increased but 12.5 per cent.

Method of Procedure

In view of this preliminary work, the following definite method of procedure was adopted. The test bricks, each having two cavities 2½ inches in diameter by ½ inch in depth, were heated slowly to the temperature at which the test was to be made. This temperature was held for 1½ hours. Thirty-five grams of slag were then introduced and were allowed to react at this temperature for 2 hours. The bricks were then allowed to cool, were cut through the center of the cavities, and the penetration was noted in the manner previously described.

Six slags, which were secured from the Carnegie Steel Co.'s laboratory, were used during the tests. Their analyses and fusion points are given in Table II. The three bricks used are designated by A, B and C.

By following the method already described and varying the brick, the slag and the temperature, one at a time, the average results shown in Tables III, IV, V, VI, VII and VIII were secured.

In each case the slag penetrated more deeply into the brick at higher temperatures. In several cases an increase of 100 degrees Cent., or less than 10 per cent, resulted in nearly doubling the penetration.

This increased penetration has several effects in actual practice. One effect concerns the strength of the brick itself. It is a known fact that bricks when saturated with slag are not so strong at high temperatures as when they are free from slag. This decreases their ability to sustain the weight of the other parts of the furnace. The refractoriness of the lining is also decreased when it becomes soaked with slag.

The lining is also subjected to more severe chemical action. This action takes place rather slowly in many cases, but rapidly in others. In any event, the action takes place sooner when the slag forces its way further into the inner portions of the lining. Being more active at higher temperatures, its solvent power is also increased.

In view of these tests, it would appear that the relation of output and the life of the lining is similar to the rate of driving and the life of an automobile. Cars which operate successfully for 50,000 miles when driven at the rate of 20 miles per hour give much less service when driven 40 miles per hour. These same cars when subjected to the gruelling ordeal of a stock car race occasionally fail to complete the first 100 miles.

Such conditions are constantly encountered when any product is driven to its limit. Such being the case, it is not fair to compare the lives of furnace linings on the daily basis. Neither is it fair to compare them on the tonnage basis, when one furnace is worked at moderate and another at maximum capacity. Under conditions occurring with increased output, they must be compared according to a sliding scale. If a furnace is operated under such conditions that the daily output of metal is increased 50 per cent, it cannot be expected to last as long, or even two-thirds as long (during which time equal tonnage would have been secured), but from one-third to one-half as long. The consumer should realize this and balance his costs under normal production against those under increased

Tests Showing Influence of Temperature of Slag Upon Life of Firebrick

Table I

INFLUENCE OF TIME AND QUANTITY OF SLAG USED UPON RESULTS SECURED FROM SLAG TESTS

Penetration of 35 grams of slag in two hours	.64
Penetration of 35 grams of slag in four hours.	68
Penetration of 35 grams of slag in six hours	.64
Penetration of 105 grams of slag in two hours	.76
Penetration of 105 grams of slag in four hours	.72

Table II

ANALYSES AND FUSION POINTS OF SLAG TESTS

Slag	Blast Furnace	Heating Furnace	Basic Open Hearth	Acid Open Hearth	Zinc	Copper
Silica	37.32	34.16	18.42	46.48	34.30	28.20
Alumina	13.21	6.13	3.85	5.45	14.74	2.20
Iron	1.62	43.60	14.55	29.30	21.00	2.10
Lime	42.20	1.30	44.10	2.16	2.33	2.51
Magnesia	2.35	.65	6.32	.00	7.07	2.14
Manganese	1.11	.55	5.09	9.08	6.77	.00
Sulphur	1.20	.27	.42	.38	5.88	.14
Phosphorus	.00	.02	.58	.00	.02	.24
Copper	.00	.00	.00	.00	1.28	58.21
Zinc	.00	.00	.00	.00	8.20	.00
Melting point	1220 deg. C.	1050 deg. C.	1275 deg. C.	1400 deg. C.	1025 deg. C.	1020 deg. C.

Table III

PENETRATION OF HEATING FURNACE SLAG, MELTING POINT 1050 DEGREES CENT.

	Temperature of Test			
Brick	1150° C.	1250° C.	1350° C.	1450° C.
Type A	.04	.09	.15	.34
Type B	.02	.05	.11	.79
Type C	.07	.10	.24	.78

Table IV

PENETRATION OF BLAST FURNACE SLAG, MELTING POINT 1220 DEGREES CENT.

	Temperature of Test		
Brick	1250° C.	1350° C.	1450° C.
Type A	.03	.08	.14
Type B	.00	.11	.17
Type C	.07	.12	.17

Table V

PENETRATION OF ZINC SLAG, MELTING POINT 1025 DEGREES CENT.

	Temperature of Test			
Brick	1150° C.	1250° C.	1350° C.	1450° C.
Type A	.03	.13	.28	.19
Type B	.04	.16	.39	.32
Type C	.05	.24	.33	.43

Table VI

PENETRATION OF BASIC OPEN-HEARTH SLAG, MELTING POINT 1275 DEGREES CENT.

	Temperature of Test	
Brick	1350 deg. C.	1450 deg. C.
Type A	.58	.73
Type B	.29	.33
Type C	.44	.55

Table VII

PENETRATION OF ACID OPEN-HEARTH SLAG, MELTING POINT 1400 DEGREES CENT, AT 1450 DEGREES CENT.

Brick	Penetration
Type A	.24
Type B	.33
Type C	.57

Table VIII

PENETRATION OF COPPER SLAG, MELTING POINT 1020 DEGREES CENT.

	Temperature of Test	
Brick	1150 deg. C.	1250 deg. C.
Type A	.46	.65
Type B	.36	.57
Type C	.52	.62

production. If the balance is in favor of conditions of increased production, he must, if he uses the most suitable material, expect to encounter continued shorter service from linings.

Book Review

Scrap Metals, by George H. Manlove, Chicago, editorial representative of the Penton publications; and *The Old Metals*, by Charles Vickers, Buffalo, metallurgical editor of *The Foundry*; cloth; 278 pp., 5 x 7½ inches; published by The Penton Publishing Co., Cleveland; $2 postpaid.

These two books bound into one furnish the first literature ever published in complete book form on the iron and steel scrap and old metals trades. Mr. Manlove has had exceptional opportunities in reporting the iron and steel markets in Chicago and elsewhere for THE IRON TRADE REVIEW and *Daily Iron Trade and Metal Market Report*, and much unique and valuable information thus obtained by him has been incorporated in these pages. Not only does the writer present a comprehensive and analytical survey of the scrap markets, but he also sets forth much information, a great deal of it new and unpublished up to this time, concerning the collection, preparation and selection of all the various grades of iron and steel scrap. Accompanying these valuable descriptions of the uses of the various kinds of scrap is a series of scrap definitions as laid down by the American Foundrymen's association, the Railways Storekeepers' association and the actual mill specifications as defined by specified representative purchasers and consumers. Mr. Manlove's style of composition is at once entertaining and clear. This book ought to be in the hands of every buyer, seller and consumer of iron and steel scrap.

Mr. Vickers has set forth in the section devoted to the old metals a vast amount of information as to the grading and uses of the different scrap metals, telling of their composition and preparation. Valuable hints to users of metals also are contained in it, all written in a lucid style.

New Mexico Manganese Mines Extended

An average of less than 10,000 tons of high grade manganese ore was mined annually in the United States between 1901 and 1916, but since the outbreak of the war, due to the impossibility of importing it, domestic manganese mining has rapidly increased. The commercial sources of manganese in the United States are high-grade manganese ore, ferruginous manganese ore, argentiferous manganese ore, manganiferous iron ore and manganiferous zinc residuum.

For several years New Mexico has produced manganiferous ores from deposits in the Silver City district. In 1917, a small output of high-grade ore came from other deposits in the state, and in 1918 the output was considerably increased by exploiting newly discovered deposits and by working old silver mines. Many of the deposits now mined are in the west-central and southwestern parts of the state. The deposits near Fierro in Grant county; those in the Lake Valley, Kingston and Hillsboro districts, Sierra county; those near Rincon, Dona Ana county, and those near Water Canyon, San Acacia, Secorro, and San Antonio, Secorro county, recently were examined by E. L. Jones of the United States geological survey.

These manganese deposits occur in veins, brecciated zones and as replacements. Manganiferous silver ore occurs in two veins that cut massive paleozoic limestone two miles northeast of Fierro. The veins are persistent and can be traced for several thousand feet along their course. The vein matter is a mixture of iron and manganese oxides and silicified limestone, and is of low grade, but could probably be sorted or concentrated to form a marketable product. The majority of the manganese mines in the district are in worked out silver mines. The brecciated lava in most of them is cemented with manganese oxides in seams that are too small to permit hand sorting, but is well suited to mechanical concentration.

How High-Grade Enameling is Done

Enameling Problems Involve Much Study as Two Materials Seldom Can be Handled in the Same Manner—Exhaustive Experimentation the Cause of Present-Day Success

BY E. C. KREUTZBERG

PAINTS and enamels are essential products and must be applied in countless ways, in most cases as much for utilitarian as for ornamental reasons. Countless manufactured articles would be practically useless without a protective coating. Human safety often depends upon such a coating properly selected and applied. Numerous accidents to hydroplanes, for instance, occurred in the present war until it was found that they were not properly protected; weaknesses developed from the corrosive action of sea water which penetrated the coating, and colored coatings in many cases prevented the detection of weaknesses which would have been revealed by transparent coatings. Gas mask valves and goggle frames, containers of food for the army and navy, parts of aviation outfits, helmets, chest armor, hand grenades, etc., have been subjects of more or less experimenting in the enameling industry before coatings were found which effectually protected them. Metal containers of food for the army, for instance, require a coating which not only is impervious to moisture, thus preventing rust but which resists the assault of poison gases upon the containers and their contents.

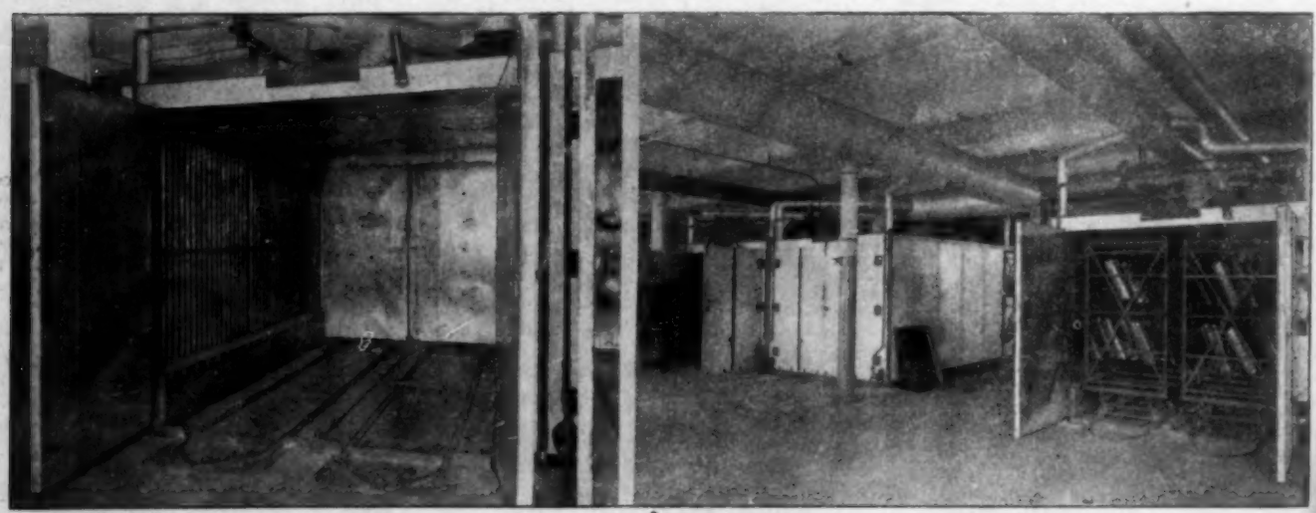
Many particular problems have been submitted to the enameling industry in recent months. For instance, the lack of steel forced the refrigerator manufacturers to turn to some other material as a substitute for sheet steel, with the result that the enamelers were called upon to develop a durable, baked-on coating to be applied to sheet zinc used in refrigerator construction. This was a problem which was not solved without difficulty, since if exposed to a high temperature during baking, zinc exhales a gas whose effect is to discolor the enamel. Another typical problem which recently came up was the need of a suitable, baked-on, water-proof enamel for coating marking buoys for the government. These are to be made of caeba wood, which is very porous and possesses unusual buoyancy; hence it makes an admirable buoy if protected with a coating which will prevent it from becoming water soaked.

Rapid Developments

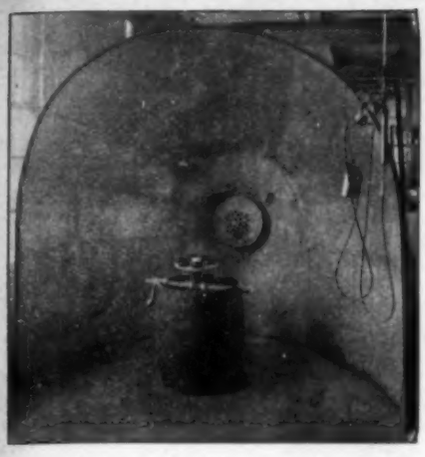
Enameling, as a commercial art, has made rapid strides during the past few years. A host of different lacquers and enamels, equipment to fill all demands, and the ability, by experimentation, to meet departures from the routine requirements, all are in the possession of the industry and are serving a field which is widening constantly. With the assistance of the chemists in the industries that supply them, the enamelers are able to turn out work of as good or a better quality than before the war. For instance, amalastite, which forms a transparent filament, up to the outbreak of the war was imported by this country in large quanties and used in making celluloid finishes, as well as in mixtures with color pigment. Amalastite was obtained from Russia where it was made as a by-product of vodka. Since the production of vodka was stopped by the Russian government, no more amalastite has been obtainable, and this product consequently has dropped out of the market. It has been replaced, however, with a satisfactory substitute developed by American chemists.

The problems encountered by the enamelers are numerous and sometimes difficult. They are asked to enamel some metals whose fusion points are lower than the temperature required for baking the most desirable coating, in which event it becomes necessary to find a coating which will bake satisfactorily at a lower temperature. In all cases the coefficient of expansion of the enamel must be practically the same as that of the substance to be enameled, since any material difference might result in cracking of the enamel. When enameling wood it is necessary to bake the piece for a few hours at about 300 degrees Fahr. in order to drive out the moisture. When this preliminary baking is neglected, the moisture will boil out during baking, marring the coating. Enamel in all cases must be dried and baked in a purified atmosphere due to the dust floating in the ordinary atmosphere. The coatings used vary widely in their properties so that selections are made in accordance with the requirements of the work.

Among the modern plants which reflect the progress made of late in the art of enameling is the large new establishment of the Enameling & Stamping Corp. of New York, Long Island city. This company, which was organized last April by W. I. Fickling, formerly president of the Fickling Enameling Corp., New York, and H. F. Holbrook, formerly president of the Holbrook Co., New York, operates one of the largest enameling plants in the country, and is equipped to do enameling of any kind. Since the United States became a belligerent last year it has been engaged extensively in enameling all kinds of war requirements. This company has capacity for enameling approximately



VIEW AT THE RIGHT SHOWS A BATTERY OF THREE DOUBLE BAKING OVENS—AT THE LEFT AN INTERIOR VIEW OF AN INDIRECT GAS-HEATED OVEN FOR BAKING ENAMEL—THE SAFETY HOODS FLY UPWARD WHEN TOO MUCH PRESSURE IS GENERATED INSIDE THE OVEN



READY TO COAT TELEPHONE ATTACHMENTS FOR AVIATORS' CAPS BY SPRAYING

500,000 average pieces per day. It maintains a laboratory for experimental purposes in order to ascertain the best methods of handling each job. Its business is of a general jobbing character and it enamels wood, metals and other surfaces. Among its specialties is the enameling of glass, to which iridiscent effects of unusual beauty may be given. For enameling in black, which is the color employed on the greater portion of the work, the company maintains a separate department.

Surface Must be Clean

Before applying a coating of any kind it is necessary to have an entirely clean surface, since even traces of any foreign substance prevent the enamel from adhering. Finger marks, for instance, are among the enamelers' enemies, since human perspiration contains four acids, any one of which prevents good enameling. First of the stages in the enameling process, therefore, is that of cleaning the work thoroughly. For this purpose it is dipped in a solution of caustic soda, which can be relied upon to remove any surface uncleanliness, as well as the remains of any previous coating. The piece then is dipped into cold water after which it is given a hot water bath. It then is ready for enameling.

Enamel customarily is applied at this plant in one of two ways; the piece either is sprayed or dipped. Occasionally it is advisable to apply enamel by hand, with brushes. For spraying small pieces endless belts have been installed which carry the work to and from the spray shields. For applying enamel to exceedingly small pieces, tumbling barrels are employed which handle such work in large quantities. Where the work is dipped, it is set up to drain into the dipping vat, after which it is loaded on trucks and pushed into an oven to be baked. Most of the work is sprayed with a pneumatic gun. The spraying is done inside of a steel shield the atmosphere of which constantly is exhausted through an opening at the rear. The work is placed upon a turn table located immediately in front of the exhaust opening, so that the work constantly is between the gun and the exhaust opening. Thus the current of air set up by the exhaust causes the color to flow on to the work. The use of the shield and exhaust also prevents the atomized color from saturating the atmosphere in the workshop. The air brushes operate with pressure varying from 30 to 80 pounds, depending upon the material which is used. The pigments generally are placed in the gun at a temperature of 75 degrees Fahr. to compensate for the automatic reduction in temperature which occurs when the compressed air expands after leaving the gun.

Inasmuch as freshly enameled work readily attracts dust from the air, it immediately is moved into dustless chambers, since the particles of dust which settle on the wet surface absorb the pigment by capillary attraction, resulting in the formation of small unsightly pimples. The air in the dustless chambers constantly is exhausted and replaced by air purified through a water filter which removes the dust. After the enamel has set, the work is placed in baking ovens which also are fed with dustless air.

For baking the enamel coatings, gas ovens of a special type are employed. These are provided with burners which make it possible to maintain the baking temperature at any point between 160 and 600 degrees Fahr. The temperature, of course, depends on the thermic properties of the material being enameled, as well as on the character of the enamel. In general, the temperature employed is the highest which safely may be used without causing discoloration of the enamel or deterioration of the material. Black enamel, as a rule, can be subjected to the highest temperatures. The gas ovens are equipped with pyrometers and are controlled thermostatically. The ovens are heated indirectly and are thoroughly ventilated, having two exists, one for the escape of gases generated in the combustion of fuel, and the other for exhausting the gases developed in the baking of the enamel. They are equipped with safety hoods which are so placed in the roof of each oven that they will fly outward and relieve any sudden pressure which might be generated in case of an explosion within the oven.

Air is Filtered

Much enameled work requires baking of a special kind, and is done in a specially designed humidifying oven. Baking in this oven is done especially when the coating or the material to be coated cannot withstand the temperature that would be required in the ordinary treatment to convert it into a hard, durable coat. It also is employed where the coating is to be thoroughly oxidized so that it will withstand severe usage, as in the case of automobile bodies. The humidifying oven is heated indirectly by superheated steam coils, and the oven is fed with air filtered through water in order to remove dust. The interior of the oven is kept humid by the introduction of steam. By this method, the outside of the enamel coat is kept moist and does not dry until the interior of the coat has been dried thoroughly through its entire depth. In other words, the drying is one "from the inside out." The air in this oven is renewed by means of a blower at repeated intervals of 2½ minutes.

METHOD OF COATING WIRE WHEELS SHOWING SHIELD AND SPRAYING APPARATUS

Aside from the service it is equipped to render, a big reason for the success of a jobbing plant of this character is the high cost of insurance, since an enameling establishment is classed with the more hazardous fire risks. Manufacturers of all kinds of products which require enameling, therefore, find it more economical to have their enameling done elsewhere than to do it in their own plants.

Stolen Machinery to Give Germany Advantage

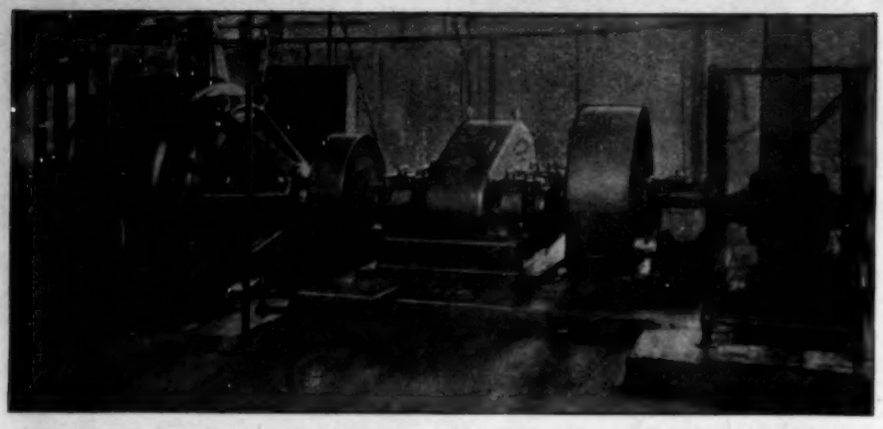
A. A. Boublikoff, a former member of the Russian duma, gave a graphic picture of Germany's commercial and industrial ambitions after the war, in a speech delivered recently before the annual convention of the American Manufacturers Export association. He described how Germans have been buying Rusian industries and Russian banking stock, while keeping their own finances in condition to engage actively in world trade.

"All Germany," said Mr. Boublikoff, "is living in the hope of receiving raw materials immediately. It is perfectly understood that the Germans started the war with the object of conquering foreign markets for the sale of their products and to secure raw materials for their overdeveloped industries. The securing of raw materials will be a question of serious concern immediately peace has been declared. It will be necessary to give employment to the demobilized armies and consequently it will be necessary to keep all factories running at full speed.

"Germany provided herself with machinery better than any other country, through plundering the factories and plants of Belgium, northern France and Poland, and she will be able to resume her former production so soon as the war is over, provided she can obtain raw materials."

Installs Motor Drive

An electric motor of the woundrotor type, recently was installed in the plant of the Cleveland Hardware Co., Cleveland, to replace a steam en-



WOUND ROTOR TYPE MOTOR REPLACES STEAM ENGINE AS DRIVING UNIT FOR A ROLLING MILL

gine which had been in use at the plant for 35 years. Prior to the installation of this motor, the company, which manufactures drop forgings, had been operating a 9-inch merchant mill belted to the steam engine. Frequent breakdowns, due to the long years of service which the old steam engine had rendered, compelled the company to consider a new driving unit. An increase in the mill's production has been obtained since the installation of the motor. This is attributed to the regularity of operation obtained. The entire electrical equipment was furnished and installed by the Westinghouse Electric & Mfg. Co., Pittsburgh. The simplicity of the equipment is perhaps its most striking feature. The motor is direct-connected by gears to the rolls, which with the transformers and control, constitutes the entire apparatus.

Power is obtained at 11,000 volts, 60 cycles, 3-phase, and is stepped down by means of a 3-phase oil insulated self-cooled transformer to motor voltage, namely 3200 volts. The motor has a rating of 450 horsepower at 900 revolutions per minute and 360 horsepower at 720 revolutions per minute. These synchronous speeds are obtained through a double winding designed to give the motor either 8 or 10 poles. The speed of the motor is reduced to the mill shaft speed by means of a herringbone gear, the motor shaft being connected to the pinion by a spring coupling. A similar coupling connects the gear to a 10-ton steel flywheel, 12 feet in diameter, which is mounted on two extra heavy pillow blocks. The wheel is made in one piece with rectangular arms.

Control of the equipment is handled by a double panel switchboard. The switches for changing the windings on the motor from 8 to 10 poles, are oil immersed, there being one in the primary and one in the secondary circuit. The primary breakers can be closed one at a time. In emergency cases, when it is necessary to stop the mill quickly, the runner breaker can be tripped, which causes all the secondary breakers to open. This operation then closes the reverse breaker which quickly stops the motor.

Operating Electrically-Driven Steel Mills

BY J. T. STURTEVANT

IN this paper the writer will make no attempt to show any comparison between electrical and steam-driven mills. The purpose is to show the layout, equipment, power consumption, tonnages and capacities of 11 installations at the Lehigh plant of the Bethlehem Steel Co.

Fig. 1 shows the layout, motor sizes and speeds, and the maximum sections rolled in our 8, 10, and 12-inch merchant bar mills. The 10-inch mill was started in July, 1915 and to April 30, 1918 had rolled 5077.80 tons of light special-sized file and shape stock at an average of 85.5 kilowatt-hours, per ton. The drive on this mill has given practically no trouble except that crowding the mill at times cut the brass thrust plate to such an extent that the plate had to be replaced and new oil supplied. The monthly record is 1516.12 tons.

The 12-inch mill was started shortly after the 10-inch mill and has a monthly record of 3045.56 tons at 38.4 kilowatt-hours per ton. To this must be added 24.5 kilowatt-hours for the 16-inch roughing mill which is part of the 12-inch equipment. This means that 3045.56 tons of finished product were rolled from 5½ x 5½ inch stock at the rate of 62.9 kilowatt-hours per ton. The roughing mill is the only mill shown in Fig. 1 which has a fly wheel. Its weight is 65,840 pounds.

Our 8-inch equipment up to six months ago gave us some rotor trouble, repeated break-downs occurring between phases and to ground caused us to take oscillograms which showed the cause and suggested the remedy. High peaks in the rotor voltage were shown when the primary circuit was opened and closed. No such voltage was shown when the control was arranged so that the secondary closed before the primary, and where the primary opened before the secondary. This was accomplished by closing the first contactor on the secondary panel actuated by the speed switch before closing the direction switch on the two-speed motors. The single-speed motors gave no trouble because the secondary was always closed.

It was found necessary to mount two contactors on all double-speed motors to short-circuit the idle winding, because high voltages in the idle winding were found to exist when starting or stopping.

Fig. 2 shows our layout for making special crucible steels. The mills were started only a few months ago. Fig.

From a paper presented at the twelfth annual convention of the Association of Iron and Steel Electrical Engineers, held in Baltimore. The author, J. T. Sturtevant, is an electrical engineer associated with the Bethlehem Steel Co.

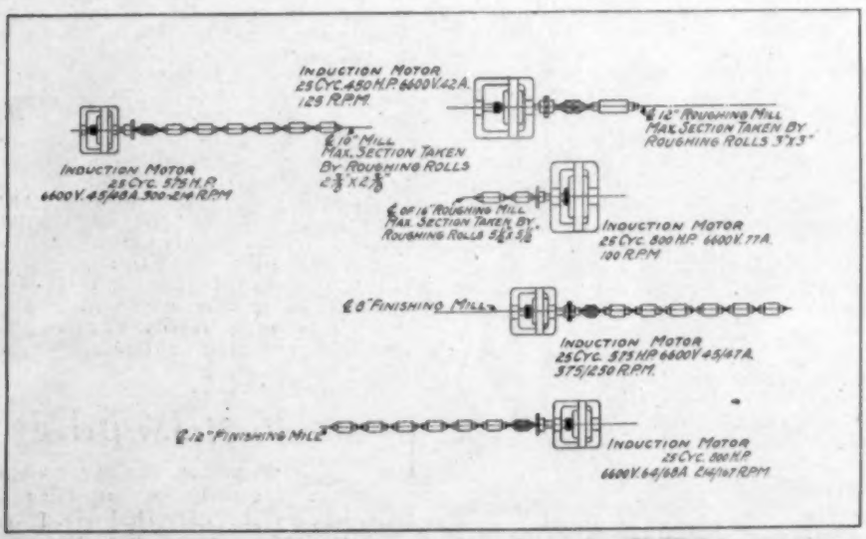


FIG 1—LAYOUT, MOTOR SIZES AND SPEEDS FOR 8, 10 AND 12-INCH MERCHANT BAR MILLS

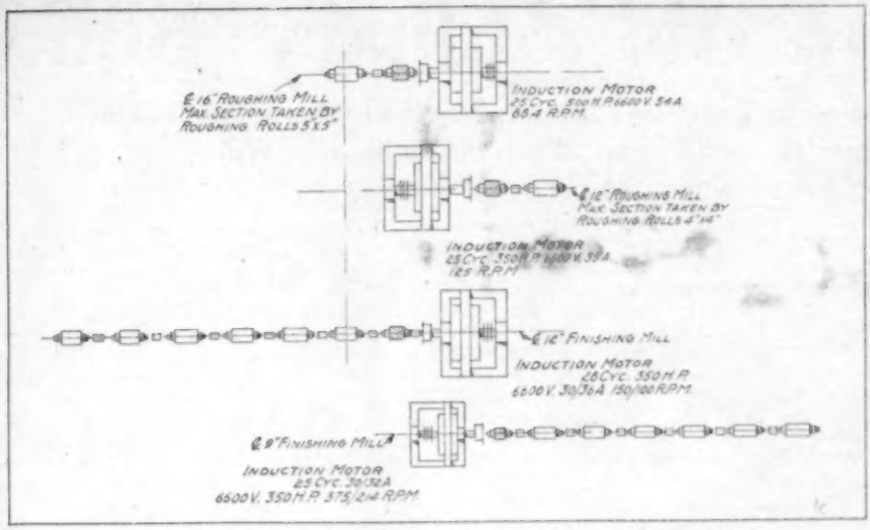


FIG. 2—MOTOR LAYOUT FOR MILLS MAKING SPECIAL CRUCIBLE STEELS

3 shows the layout of the 22-inch bar mill in which the maximum section of the bloom is 10 x 9 inches. The record monthly tonnage is 15,570.02 tons at the rate of 22.91 kilowatt-hours per ton. The value of a balanced fly wheel, weighing 86,466 pounds, which takes the high-power peaks on breaking down, is demonstrated in this mill.

Fig. 4 shows the layout of the 18-inch continuous mill driven by a 3000 horsepower motor, started January, 1916. This mill up to the present has not been run to capacity due to a shortage of steel, but the average rate in kilowatt-hours per ton is 28.5.

Control System

The motors in each of the groups are operated by one man who has an elevator-type annunciator at his station. This and a system of signals makes possible any combination of operations without commotion.

The question of flywheels in connection with motor drives is one on which engineers differ but experience has taught us new installations should have a little more consideration in that respect. For instance, our 16-inch roughing mill has an 800 horsepower motor running at 100 revolutions per minute. The WR² of the rotor is 210,000 foot pounds. To this was added 2,500,000 foot pounds by the use of a flywheel, making a total of 2,710,000 foot pounds. The amount of work performed and service required has shown us that on this layout a smaller motor might have been used and our 12-inch bar mill equipment would have been more practical with a 500 horsepower motor, the flywheel WR² value of which would be about 2,700,000 foot pounds, on the rougher and a 12-inch finishing mill motor of 1000 horsepower at 214 to 167 revolutions per minute with about 215,000 foot pounds in the rotor.

The reason an increase of 200 horsepower in the finishing mill drive is mentioned and plenty of power in all finishing mills advocated is because of the heavy tonnages on flats and squares, which are possible if the roll stands are kept fairly full.

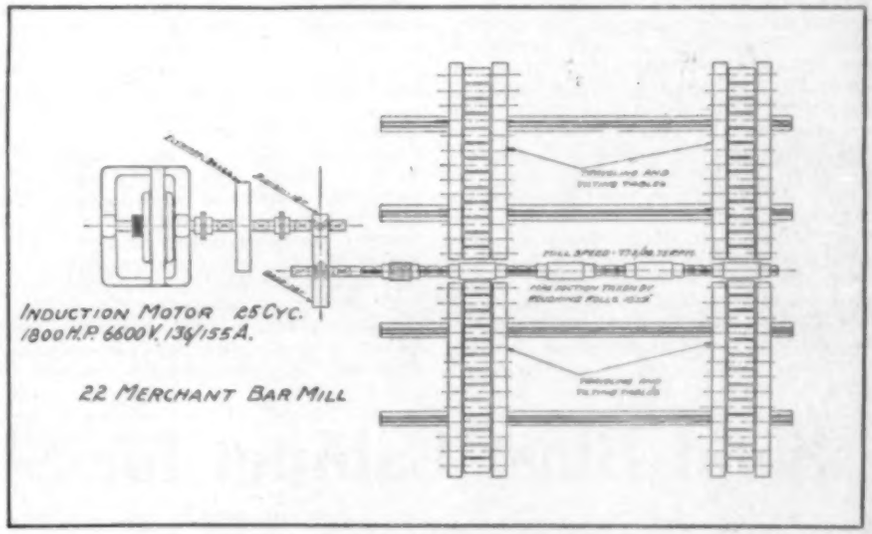


FIG. 3—MOTOR LAYOUT FOR 22-INCH BAR MILL

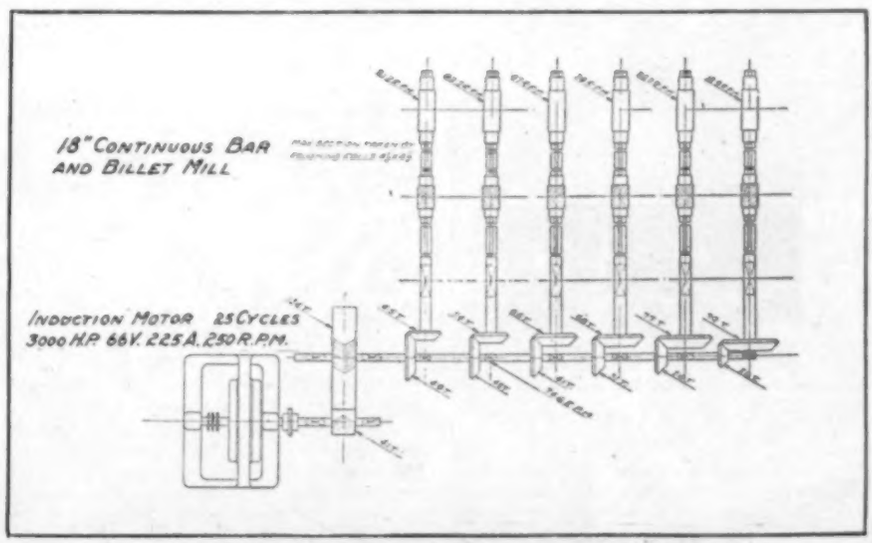


FIG. 4—MOTOR LAYOUT FOR 18-INCH CONTINUOUS MILL

Open Consulting Office

Under the firm name of Carney & Lindemuth, Frank D. Carney and Lewis B. Lindemuth recently opened offices at 40 Wall street, New York City for consultation work in iron and steel metallurgy and operation. Resignations have been presented to the Bethlehem Steel Co., Bethlehem, Pa. Mr. Carney for the past few years, has been chief metallurgist for the various plants controlled by the Bethlehem Steel Corp. After he represented certain financial interests in steel works in Germany, he was affiliated with the Pennsylvania Steel Co., in the position of assistant general superintendent, where he remained for 14 years. Mr. Lindemuth, after directing the heat treatment and metallurgical research departments of the Pennsylvania Steel Co., for several years, became assistant superintendent of the bessemer and open hearth departments, which position he held for four years. When the Pennsylvania Steel Co., was purchased by the Bethlehem Steel Co., Mr. Lindemuth was transferred to the Bethlehem plant as assistant superintendent of the open hearth and bessemer departments. He later was appointed superintendent of the crucible and electric furnace departments of the Bethlehem plant, in which position, he now is employed.

The Detroit Copper & Brass Rolling Mills, L. H. Jones, president and general manager, is having plans prepared for a large addition to its brass and copper sheet mills.

Red Cross to Aid Military Blind

Investigational Work is Started to Determine Industries Which May Offer Employment to Those Blinded in the War—Central Commission Will Classify Occupations Which Are Suitable

THE average manufacturer in this country has been so accustomed to destructive investigations of his plant that the announcement of an investigation which is intended to help him may read like a fairy tale. Nevertheless, this is what is now proposed by the Red Cross institute for the blind at Baltimore, which is under the direction of Lieutenant Colonel James Bordley. The institute is planning a survey of every occupation in every industry in the United States to determine which are available for the blind, both civilians and military, who may help to speed up the essential industries and, perhaps, tide some of the less essential industries over the war.

The primary purpose of the survey is to determine the proper course to pursue in the training of the military blind. In addition, it may furnish a solution of the whole problem, as the civilian and industrial blind are expected to profit from the study fully as much as the military blind. It is not proposed to place blind persons in any one firm or industry, but simply to determine what possibilities are open for the blind. Then if the manufacturer requests some of this available labor he will be put in touch with the men who can make a success of his operations from the start.

A classification will be made of the occupations and products of all industries. A list will be obtained of all the firms in the country which fall under each classification. From each of these lists, the plants will be picked which are the best organized and the best equipped in their line. The survey in each plant will consist of a careful study of the organization of the firm, the routing of the material, and the requirements for every occupation within the organization. The plan for doing this has been worked out by the Society of Industrial Engineers and several consulting efficiency engineers. Each survey will follow the same general plan.

Investigation is Thorough

The occupational analysis goes sufficiently into detail to enable a central commission, from the facts enumerated on the various plant reports, to pick out those which are real occupational probabilities. The work will then be carried on in three ways:

Those plants which have efficiency forces and prefer to make their own surveys will do so, since their men know the conditions existing, and can get the necessary information in the shortest possible time. Firms which prefer to do so may have an expert on the blind from the institute work with their time study men in making these analyses. Still others which either have no time study men available, or, for other reasons, prefer to do so may turn the work of gathering the data over to a corps of men from the Red Cross.

The Red Cross is interested in gathering only the information necessary to develop the courses of study for the blind and will render only such assistance as is requested. When the possibilities have all been learned in any particular class of industry the reports will be sent to Washington, where a central commission will sort out the probabilities from the list of possibilities. Every effort will be made to determine the best possible method of performing each operation in this list. When the best method has been determined it will be taught to the instructor and the instructor will teach the blind soldier to perform the work properly before the blind man is turned over to the discipline of the trade selected. It is hoped that the man will not only be able to do the work as effectively as he did before he was blinded, but will be able to increase his wages over what he formerly received. This will represent a gain to manufacturer in three different directions: It will enable him to take care of those of his own men who return blinded; it will open to employers a new labor supply and it will open many new methods of carrying on his operations, thus speeding up his own plant without entailing any injury to the other workmen in his plant.

Sand Blast Cabinet for Shell Cleaning

THE manufacture of all cast shell involve many difficulties that cannot be overcome by ordinary methods, among them being the inside cleaning of the castings. The machine shown in the accompanying illustrations was designed by the Pangborn Corp., Hagerstown, Md., especially for cleaning the insides of shell by sandblasting, and many novel features have been incorporated in its design and construction.

The apparatus consists principally of four revolving chucks, driven at slow speed, suitably shaped and arranged for holding and rotating the shells while the sandblast is in operation. A general view of the machine is shown in Fig. 1, while Fig. 2 is a plan view illustrating some of the details. It will be noticed that the chuck nozzles are eccentrically arranged. The object of this is to insure the sandblast reaching every part of the inner surface during the cleaning operation.

The chucks are mounted on substantial ball bearings which are protected from contact with the abrasive used. They are contained in a metal case and hold the shell in a vertical position with the nose or ogive downward.

Four suction-type projectors are used. These are arranged directly below the shell openings and are set at a slight angle. No further movement or adjustment of the shell or nozzles, mechanical or otherwise, is required after the shell are placed in position on the chucks. Handles for the air valves, which by a single movement start and stop the blasting operation, are located in front of each chuck, within convenient reach of the operator.

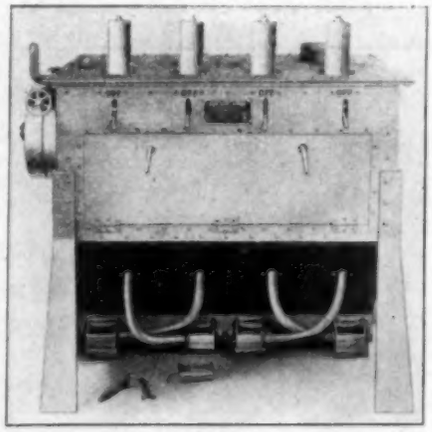


FIG. 1—INSTALLATION FOR SANDBLASTING STEEL SHELL

The chucks are rotated by means of a belt that encircles them. By means of bevel gearing, power is transmitted from a horizontal shaft, on which are mounted tight and loose pulleys, to the vertical shaft carrying the pulley that drives the chucks.

The bottom of the cabinet forms a hopper for the abrasive which is supplied by gravity to the suction-feed boxes. The cabinet is made of steel plate and encloses the entire operating mechanism. In the top of the cabinet is an opening for connection to an exhaust system for removing the dust generated.

The blasting member is of special design, which has been found to give the most efficient results. It produces the mixture and movement of the abrasive in combination with the correct size and relation of the air jet and abrasive

nozzle. The air consumption is said to be constant, due to no enlargement of the air jet. Either sand or metal abrasive can be used, as may be thought best suited.

In any sandblast operation, it is pointed out, the maximum abrading action is obtainable only with a proper mixture and movement of the combined air and abrasive, together with the correct relation in size and design of the air and abrasive nozzles.

No Special Foundation Needed

The minimum amount of the air force is used for raising the abrasive to the projector where the air and abrasive are combined in a direct movement that imparts the maximum velocity to the abrasive in its discharge from the nozzle. Adjustments are provided for angular, vertical and horizontal movements to meet various requirements.

It is pointed out that the cabinet needs no special foundation and that it can be located as the routing of the work demands. It is ready for operation as soon as the proper connections are made to the air and power lines at the machine.

The operation of the device is comparatively simple. The abrasive is loaded through the front door to a depth of approximately one foot in the hopper. The driving belt is shifted to the tight pulley, which causes the chucks or rotate. The shell are placed on the chucks one at a time, nose downward, and the blast turned on by means of the air valve.

The shell should remain in the blast the necessary time to insure them being properly cleaned, which is determined by experiment. As fast as the shell are cleaned, new ones are substituted. Thus the operation can be carried on continuously.

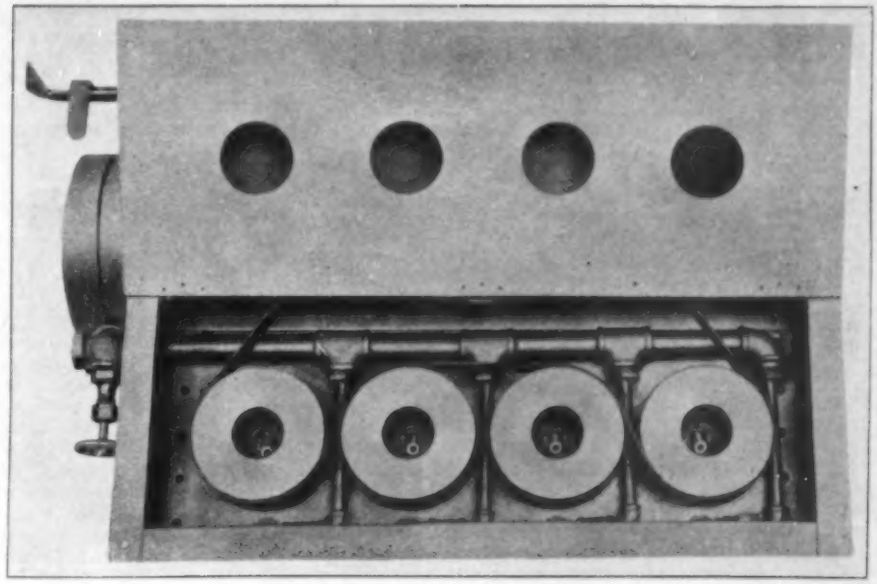


FIG. 2—PLAN VIEW SHOWING CHUCKS, METHOD OF DRIVING AND THE BLAST NOZZLES

France Saves Americans From Profiteers

BY FRANCIS MILTOUN

(Paris Correspondent of The Iron Trade Review)

WITH the arrival of the American army in France 15 months ago there became apparent a need for acquiring on the spot certain materials of a prime and pressing necessity. The procedure was much like that in vogue among traveled Americans in France before the war. The American forces, as did the English before them, acquired a reputation for doing things quickly, paying high prices and never bargaining. Some of us who have lived long in France still stick to this method which we believe to be the best. In individual cases, perhaps, it is, but with the *ravitaillement* of an army with all those accessories which go to make up the panoply of war it was soon found that some other procedure was necessary.

Both official and private purchases were at this time often made at prices manifestly too high. Regulation was difficult for there was no machinery for the application of decrees, those temporary laws, which can be recalled at any time according to the French code, and there was still more difficulty in making those decrees generally known quickly throughout the length and breadth of France where American troops were congregating.

The prefects and mayors were soon advised of the treatment which was to be accorded the new allies. In a measure this worked. Where manifest overcharges were made manufacturers and intermediaries were put on a prohibited trading list.

All of this helped much but as late as Aug. 22 the French ministry of agriculture and food supplies issued a circular which called the attention of the French civil and military authorities to the "protection which should be afforded our allies," and this notably to the extent of a posting of prices publicly as well as providing for amends for violation of the law.

Everything has been done that was possible with the machinery at hand, and many are of the opinion that some cases of overcharging which have been met with by American army officers and men and civilians have been partly the fault of the individuals themselves.

Protection Afforded

According to a statement which has been made public by Monsieur Andre Tardieu, head of the board of Franco-American war affairs, a system of regulations governing the purchase of supplies in France for the American army has been put in operation as follows:

No purchase above 5000 francs ($1000) of any kind, is to be made in France by the American army or any of the charitable or welfare organizations connected therewith without the terms first being submitted to a proper French bureau which will veto the transaction if the terms are too onerous or the prices too high. At first the figure was but 500 francs ($100) but this figure offering too much possibility of delay and red tape, was raised in September, 1918.

For purchases above 5000 francs the American army authorities make a demand upon the French-American commissariat general, the Tardieu bureau, which forwards it to the proper bureau of specialists which gives its opinion thereon as to the advantageous price and terms and the likely source of supply. If an unfavorable report is made as to the open market the French themselves undertake to supply the articles at cost. Several millions of tons of raw and manufactured materials have thus been supplied. Anything which the French may have in warehouse is thus made immediately available for the American forces.

There is now competent supervision as to specifications and prices which, without this close co-operation, would not be possible. The only comment which the French bureau makes upon the working of the system is that in many cases the American authorities have restrained themselves from making complaints as to details, when if a proper complaint was lodged at the time of delivery a more just adjustment of prices than has actually resulted would be achieved. This is to the credit of the genial relations of the French and Americans in those multifarious operations which the war has brought about. As Monsieur Tardieu himself has said:

"It is to be hoped that in the future the American authorities will not hesitate to notify the proper French authority, without delay, of any seeming abuses that may come up, in order to facilitate the suppression of such."

Comparing the Corrosion of Alloys

Knowledge of the Deterioration Resistance of Engineering Materials is Essential to the Intelligent Design of Structures and Machines—A Short Comparative Method is Explained

BY R. B. FEHR

IN order that the results obtained by different experimenters may be comparable and lead to definite conclusions regarding laws of corrosion, standards should be adopted in regard to such matters as dimensions of specimens, preparation of surfaces, amount of corroding medium, method of suspension in medium, temperature, access of light, duration of test, diffusion, cleaning and weighing of specimen, method of expressing relative corrosion, and, perhaps most important of all, the nature of the corroding medium.

The ultimate aim should be to devise a comprehensive series of tests to which standard specimens of materials may be subjected, and by which the relative corrodibilities of these different materials may be predicted for certain service conditions. A great amount of systematic research work would have to be done before a satisfactory set of standards could be devised, but the problem is somewhat simplified by the fact that relative values of corrosion are desired rather than absolute values. Consequently, it will probably be found that a few tests will cover in a qualitative way the most usual conditions that are met with in practice.

One of the most important factors that would be involved in any proposed standard method is the time element. Although the best test of the usefulness of a material is, of course, the actual service test during a long period of time, no engineer would think of building a machine or structure without first making strength tests of samples of the materials used; and in like manner he would prefer to have some comparatively simple means for determining the relative corrosion of materials before deciding upon the best one to use under the particular conditions involved, without having to wait for the test of time on the completed structure in service.

To meet this short-time requirement, various so-called "accelerated" corrosion tests have been devised, the principal corroding media being sulphuric acid and sea water or other salt solutions. These methods have met with much opposition for the reason that they do not imitate and therefore cannot intensify natural corrosion influences, as they were intended to do. The results thus obtained are not in agreement with those obtained under practical service conditions. This is not surprising, for it is now becoming generally recognized that the relative corrodibilities of different materials vary with the nature of the corroding media. What may be highly resistant under one set of conditions may be highly corrodible under a different set of working conditions.

Since accelerated tests are not regarded as trustworthy, and also since long-time tests are not feasible, it becomes necessary to adopt some compromise between the one or two-hour period of accelerated tests and the many years of the actual service tests. Some preliminary experiments conducted by the writer led to the conclusion that trustworthy results could be obtained within a period of a few weeks, provided analytical balances were employed and the same care exercised as in quantitative chemical analysis. Of course, small test specimens would have to be employed. The objection might be urged that small specimens would not be representative of the material, but duplicate or triplicate samples, combined with greater uniformity of preparation and accuracy in weighing should more than offset this nominal disadvantage.

Methods Previously Employed

Not only is it necessary to adopt standard methods of testing, but it is equally important to agree upon some uniform method of expressing the results. The following methods have been employed:

a Loss of weight (speciments of practically the same original weight)

b Per cent loss of weight

c Loss of weight per unit area of exposed surface

d Appearance as judged by the naked eye or lens.

Methods *a*, *b* and *c* are satisfactory if the conditions of testing are exactly the same within experimental limits of accuracy. Methods *a* and *c* do not give correct relative values of the corrodibilities of materials that differ appreciably in density. Method *b* does not have this objection, but like *a* it does not take into account important differences in the ratios of exposed surface to volume. Method *d* is merely qualitative and depends upon personal judgment, but is useful for cases of unequal corrosion, or pitting, as will be noted later.

Although experiments run under different conditions with respect to weight, density and exposed surface of the specimens can never be considered strictly comparable, a much better

Table I

Corrosive Results on Different Materials

Specimen	Weight, grams	Volume, cubic centimeters	Surface, square centimeters	Square centimeter per cubic centimeter	(a) Loss, grams	(b) Loss, per cent	(c) Loss, grams per square centimeter
1	15	3	75	25	1.5	10.0	0.020
2	15	3	150	50	3.0	20.0	0.020
3	30	3	150	50	6.0	20.0	0.040
4	30	3	300	100	12.0	40.0	0.040

Table II

Analyses of Alloys

	A	B	C	D	E	F	G
			Percentages				
Iron	99.84	2.30	98.473	98.697	Trace	67.406	99.647
Carbon	0.01	....	0.78	0.459	.....	0.19	0.04
Manganese	0.025	1½-1¾	0.594	0.74	.....	1.35	0.36
Silica	0.005	....	0.065	0.06	.....	0.184	0.01
Sulphur	0.025	....	0.055	0.035	.....	S and P less than 0.04	0.036
Phosphorus	0.005	....	0.013	0.009	.....		0.007
Copper	0.05	30.02	....	....	89.84	.....	....
Nickel	....	65.48	....	....	....	30.83	....
Aluminum	....	....	....	....	9.96	.....	....
Titanium	....	....	0.02	....	....	.....	....

Abstracted from a paper presented at the annual meeting of the American Society of Mechanical Engineers. The author, R. B. Fehr, is a physicist with the Recording & Computing Machine Co., Dayton, O.

measure of the relative corrodibilities of materials can be gained by applying the following method of reasoning:

Suppose, by way of example, that a certain corroding medium gave the results on specimens of different materials having dimensions as noted in Table 1. This example is a somewhat extreme case, but it sometimes requires an extreme case to emphasize a point. A study of the results obtained by the three methods *a*, *b* and *c* is interesting in that they appear to indicate four, three, and two different values, respectively, for the relative corrodibilities, whereas in reality the four materials have the same corrodibility, as further consideration will easily show.

Volume and Time Important

What really counts in corrosion is the volume of material removed in a given period of time on each unit of surface, and not the loss in volume per unit of volume, nor the loss in weight per unit of surface, etc., for these latter methods do not take into account the differences in density and exposed surface of the specimens, which differences are certainly no fault of the materials. For instance, specimen No. 2 has the same density, but twice the exposed surface of No. 1. If it were of the same material as No. 1 it would be expected to lose twice the weight, and yet it would be manifestly unfair to say that the relative corrodibilities are different, as indicated by methods *a* and *b*.

Again, No. 3 has twice the density of No. 2, and if it had the same corrodibility it should lose twice the actual weight, as well as twice the weight per unit of surface. Therefore, provided all other conditions were the same in these cases, the only method that would indicate equal corrodibility would be method *b*, on account of the cancelling out of the density factors.

Obviously, therefore, none of the methods employed thus far indicates the true relative corrosion values for specimens of different sizes from different materials. However, if the results obtained by method *b* in Table 1 are divided by the respective values for the ratio of surface to volume, the results will be 0.40 in each case, and thus a true measure of the relative corrodibility is obtained.

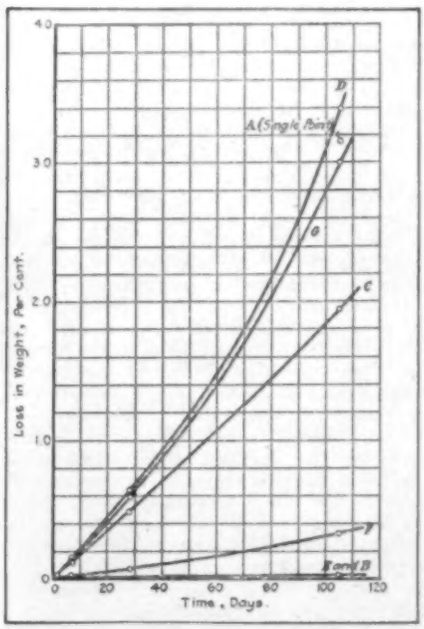


FIG. 1—CORROSION IN TAP WATER

The algebraic derivation of this method is as follows:

Let a = area of exposed surface of test specimen, square centimeters.
v = volume of specimen, cubic centimeters.
d = density of material, grams per cubic centimeters.
w = original weight of specimen, grams
s = loss in weight in grams by method (a)
p = per cent loss in weight by method (b)
K = relative corrosion by proposed method, per cent of cubic centimeter per square centimeters of surface.

$$p = \frac{s}{w} \times 100$$

$$= 100 \frac{\frac{s}{d}}{w} = 100 \frac{\frac{s}{d}}{v} = \text{per cent loss of volume,}$$

since the volume equals weight divided by density.

$$\frac{a}{v} = \text{ratio of surface to volume,}$$

and

$$\frac{p}{a} = 100 \frac{\frac{s}{d}}{v} \times \frac{v}{a} = 100 \frac{\frac{s}{d}}{a} = \text{per cent of}$$

cubic centimeter lost per square centimeter of surface. Therefore,

$$K = \frac{p}{\frac{a}{v}}$$

that is, the per cent loss in weight is to be divided by the ratio of surface to volume.

These values of *K* will then represent the true relative corrodibilities when the conditions of testing are the same except for the densities and dimensions of the specimens. But finally, in order to express in the simplest and most easily comprehended manner the relative values of different materials in regard to their resistances to corrosion, the reciprocals of the *K* values should be taken and

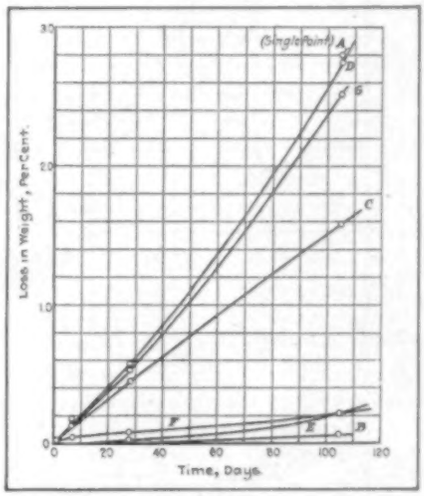


FIG. 2—CORROSION IN 0.10 PER CENT SEA-SALT SOLUTION

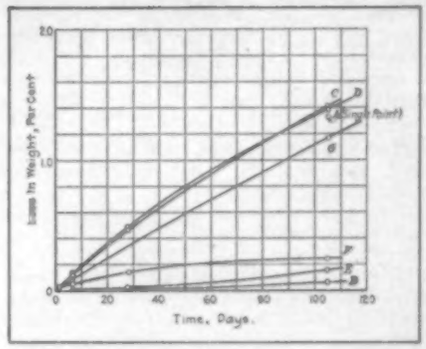


FIG. 3—CORROSION IN 10 PER CENT SEA-SALT SOLUTION

compared with the highest one which, for the sake of comparison, may be regarded as having a corrosion resistance of 100 per cent. Thus, if materials *A*, *B*, *C*, and *D* have values for *K* of 5, 10, 15, 20, respectively, the reciprocals or resistances to corrosion will be 0.2, 0.1, 0.067, and 0.05, while the relative "efficiencies" of resistance to corrosion will be 100, 50, 33⅓, and 25, respectively.

Corrosion Varies With Surface

This method of expressing relative corrodibilities takes into account the obvious fact that corrosion varies directly as the exposed surface, other things being equal. The time element cannot be involved in any method of expressing corrosion, for it is a well-established fact that corrosion does not vary directly as the time, since the first layers of corrosion products may in some cases inhibit, and in other cases, accelerate, corrosion. In other words, the duration of all tests that are to yield comparative results should be a constant quantity.

The writer believes that careful tests of different sizes of specimens of various kinds of materials run under like conditions will justify the above proposed method of expressing the results, but as yet no such series of tests can be offered. It may be of interest to report the results of a series of tests that were run for the purpose of ascertaining the consistency of results that could be obtained by exposing small-size specimens to tap water and solutions of sea salt for comparatively short periods of time. These tests are to be regarded as preliminary, and therefore the arbitrary conditions adopted will be subject to such future modifications or drastic changes as inconsistencies in results of these and succeeding series of tests may indicate.

A number of commercial alloys were supplied by various manufacturers who were interested in tests run by experimenters who had no interest in any industrial concern. The analyses of these alloys, as made by the manufacturers, are shown in Table 2.

Applying the Tests

The alloys were supplied in the form of ¼-inch rolled stock, which was turned down in a lathe, and from which were cut disks of fairly uniform size. A ⅛-inch hole was drilled in the center of each specimen in order that a glass hook could be inserted for suspending the specimen in the corroding medium. All the specimens were first roughly polished by emery cloth and then finished to uniform surface conditions by rouge cloth. The disks were then

washed in ether to remove all grease, dried in a dessicator, and carefully weighed on analytical balances.

The following solutions were employed:

Tap water

One-tenth per cent sea-salt solution (one gram of sea salt per liter of tap water)

Ten per cent sea-salt solution (100 grams of sea salt per liter of tap water).

The tests on the various alloys and three solutions were run simultaneously with duplicate specimens. A 150-cubic centimeter beaker filled with 100 cubic centimeter of the corroding solution was provided for each individual specimen, which was suspended in the middle of the solution by means of a glass hook attached to a short piece of wood resting on top of the beaker. At the end of the one-day (24-hour) test the specimens were removed from the beakers, soaked for several hours in a solution of ammonium citrate in order to remove the rust, dried and carefully weighed to determine the loss in weight. The specimens were then polished so as to have new surfaces, cleaned, dried and weighed for the succeeding seven-day test, for which new solutions were employed. This procedure was maintained for the 28- and 105-day tests. In all cases the beakers were placed in a glass case, and the daily maximum and minimum temperatures were observed.

In expressing the results of these tests, the percentages of loss by weight were plotted in Figs. 1, 2 and 3, rather than the values of K as proposed above, for the reason that the ratios of the surface to volume were practically the same, the average deviation from the mean being only 4.6 per cent. In Figs. 4, 5 and 6 are plotted the relative efficiencies of resistance to corrosion as previously explained, the alloy marked F being taken as the 100 per cent standard in this case. Alloys B and E exhibited such a slight amount of corrosion that they could not well be used as a basis for comparison.

The most impressive feature of these tests as seen in the curves of Figs. 1, 2 and 3 is the consistent grouping of the more corrosive iron and steel alloys A, C, D, and G, as against the highly resistant alloys B, E and F, in which copper and nickel are the most prominent constitutents. In the first group it should be noted that the steel C, in which titanium is employed as a cleanser, shows considerably less corrosion than the other steels in tap water and weak salt solutions. In the second group the copper-nickel alloy B was in most cases superior and in no case inferior to all the other alloys. This was the only alloy that exhibited its original appearance after being cleaned in the ammonium citrate solution to remove rust.

Perhaps the next most impressive fact brought out by these tests is the decreased corrosion of the more corrosive group of alloys as sea salt is added to tap water. This effect is not observed in the non-corrosive group of alloys, for the reason that it is probably masked by experimental errors in determining the slight losses in weight. This decreased corrosion with increased concentration of the salt solution is in harmony with the results of other experimenters, notably Friend and Barnet.

The practically pure iron A, which was received in time for only the 105-day test, gave disappointing results, since in all three corroding media it showed practically the same corrosion as the ordinary carbon steels, D and G. However, in fairness it should be pointed out that rust may either accelerate or inhibit corrosion. If the metal is homogeneous, sound, dense, and free from occluded gases, the rust will probably be dense and closely adherent and will thus offer some degree of protection. If the metal is non-homogeneous and contains a considerable amount of occluded gases, the latter upon escaping will cause the rust to become spongy and porous, and will therefore permit the electrolyte to come more readily into contact with the metal. In the case of the practically pure iron A only one test (105 days long) was run, and consequently no curve of results could be obtained.

A study of the data points to the conclusion that when corrosion specimens are fairly uniform in density, area of exposed surface and volume, the method of expressing the relative corrosions by percent loss in weight gives results as consistent as those obtained by the newly proposed method, for the average deviations of both methods are practically equal. It should be kept in mind, however, that the use of the new method, in cases where the specimens vary considerably, among themselves with regard to density or ratio of surface to volume, will serve to give a better basis for comparison.

The relative efficiencies of corrosion resistance as shown graphically by Figs. 4, 5 and 6 indicate that consistent results can be obtained by the method of testing employed in these series, when the duration of the test is one week or more for the more corrosive alloys and about two months or more for the less corrosive alloys. In fact, one day is quite sufficient to classify groups of alloys in the order of their corrodibility for such corroding media as will cause enough loss in weight to be determined by analytical balances. Nevertheless, before any final conclusion can be drawn as to the best method of testing relative corrosion, a vast amount of work will have to be done, especially with reference to the results of service tests as compared with laboratory tests similar to those described in this article. For the present, however, it seems proper to conclude that consistent results (at least among themselves) can be obtained by using small specimens and employing

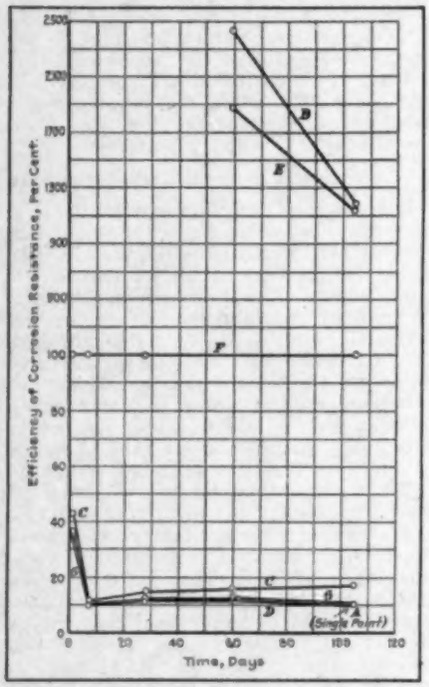


FIG. 4—RELATIVE EFFICIENCIES OF CORROSION RESISTANCE OF ALLOYS IN COMMON TAP WATER

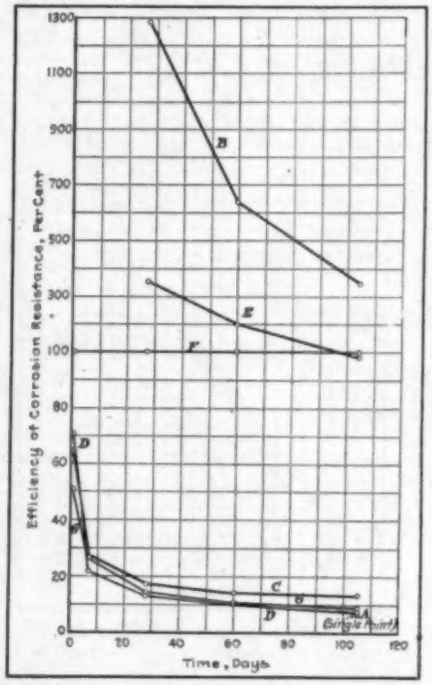


FIG. 5—RELATIVE EFFICIENCIES OF CORROSION RESISTANCE IN 0.10 PER CENT SEA-SALT SOLUTION

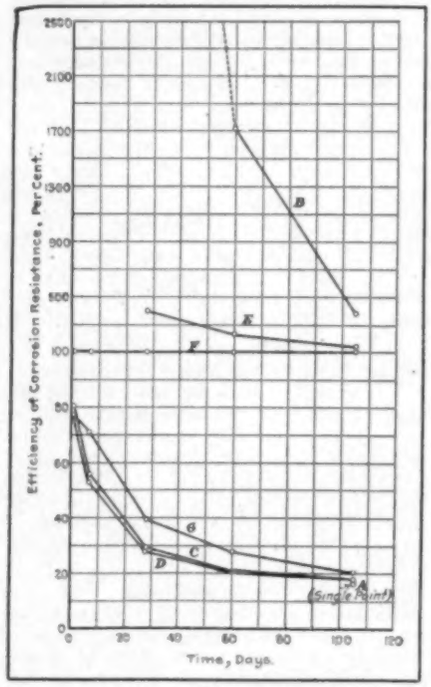


FIG. 6—RELATIVE EFFICIENCIES OF CORROSION RESISTANCE IN 10 PER CENT SEA-SALT SOLUTION

Northwest Assured Busy Future

Shipyards Have Work for Two Years, While Majority of New Industries Incident to War Expect Continuation of Activity—Pacific Port Facilities Are Being Improved for Tremendous Rush of Business

(Special Correspondence)

SEATTLE, Nov. 26.—Whether final peace terms are signed soon or late, the Northwest is not likely to return to conditions before the war. In the time that has intervened since the opening of the war, industry has become somewhat stabilized, and assurances are ample that while the high speed will not continue, the demand will be such that practically every plant that has been showing efficiency in turning out war material will indefinitely maintain a substantial payroll, and a majority of the new industries incident to war activity will remain.

The shipbuilding industry, of course, takes precedence over all others and conditions are such that it will continue so for a considerable period. The fact that the present program of the government calls for 15,000,000 tons of shipping, but 2,500,000 of which have been built, shows what a vast amount of work remains to be done.

Efficient yards will be kept going to capacity and inefficient yards that have been permitted to operate on account of the emergency will drop out when the emergency is past. Of significance to the West and to the Northwest in particular is the statement of President Hurley of the shipping board: "We will look to the west coast to continue the pace it has maintained and to the yards of the East, South and in the Great Lakes region to increase their output." As the Northwest has been setting the pace, it is assured of liberal consideration until the program of the shipping board has been worked out.

At Seattle about 20,000 men are employed in the steel shipyards proper and about 4000 in the contracts shops which are engaged to capacity in making engines and other equipment for the ships being turned out at local yards. When the government's program of constructing ships is halted powerful interests from France, Norway and Italy are expected to step in and place contracts for steel ocean carriers, ranging from 4000 to 10,000 deadweight tons. Representatives of these interests were recently in Seattle investigating the matter. It is estimated that the government program will occupy the steel yards for a period of at least two years.

In the Columbia river district which includes Portland, Vancouver, Washington, Astoria, Oreg., and other points 28,000 men are employed directly and indirectly in shipbuilding. Approximately 12,000 of these are employed in the steel yards at Portland and Vancouver, Wash., while the subcontract shops employ several thousand men. These Oregon yards have played a prominent part in keeping the Northwest in the front rank as a shipbuilding section and it can be safely assumed that they will be occupied for at least two years after the close of the war with government orders. At Tacoma the Todd Drydock & Construction Co. is constructing steel ships. Three thousand men are employed in this yard and approximately 1000 men in the contract shops of the city.

John Coughlan & Sons are extensively engaged in the construction of steel ships at Vancouver, B. C., and the Wallace shipyards in North Vancouver are filling large orders for both steel and wooden ships. The need of Canada for ships is also urgent and there is every indication that there is a large amount of work ahead for British Columbia yards.

The situation as to wooden shipbuilding is not so definite as it is to steel construction. There are scores of wooden yards on the Pacific coast, particularly in the Northwest and the tonnage they are turning out reaches into imposing figures. It is true that a number of inefficient yards will go out of existence but the accessibility of materials, demand for shipping and equable climate mean that wooden shipbuilding will hold its own for some time. The launchings and new contracts awarded do not indicate a dangerous falling off in the industry to date. Sixty-nine wooden steamers by Jan. 1, 1919, is the ambitious program set by the Oregon district. When this program was fixed 18 of these ships had been delivered to the government fully equipped. Ten ships were delivered from this district in September, including types of the Hough, Ferris and Ballin designs. The Hough and Ferris types are of 3500 tons deadweight capacity and the Ballin is a composite vessel of 4500 tons. The Peninsula type is a 4000-ton vessel and is being constructed in the district. It is expected that the new 5000-ton design, the largest all-wood ship ever approved, will be under way soon.

Belgian Interests Order Ships

Contracts for seven 3200-ton wooden vessels for Belgian interests have been awarded, four to the Northern Construction Co., formerly the Western Canada Shipyards, at Vancouver, B. C., and three to the Coquitlam yards of the Pacific Construction Co., at Coquitlam, B. C. The G. M. Standifer Construction Corp., with wooden yards at North Portland and Vancouver, Wash., and steel yard at the latter place, was recently awarded a contract for 10 wooden vessels for the Emergency Fleet corporation, also a contract for five steel vessels, the two contracts aggregating approximately $15,000,000. The tenth Ferris-type ship for the Sanborn yard at Tacoma, Wash., was launched Nov 6, and the 4000-ton wooden steamer BLAKELEY was launched at the plant of the Puget Sound Bridge & Dredging Co., Seattle, on Nov. 7.

Concrete ship construction is not making material headway in the Northwest, although conditions are favorable for it in many respects and some months ago it seemed probable that there would be much activity. The West Coast Shipbuilding Co. was awarded contracts for a number of concrete river transports by the embarkation service of the army, and the Great Northern Shipbuilding Co., of Vancouver, Wash., was awarded a contract for a few concrete water carriers by the same organization, but efforts to induce the Emergency Fleet corporation to establish a yard on Puget sound were unavailing. The government program calls for 38 tankers and cargo ships of 7800 tons deadweight each, three cargo ships of 3500 deadweight tons each and one cargo ship of 3000 deadweight tons. These will be built at the government yards at Wilmington, N. C., Jacksonville, Fla., Mobile, Ala., San Francisco and San Diego, Cal., with first launchings scheduled for December and the entire program to be completed within a year.

The climate of Puget sound is ideal for concrete shipbuilding because of the moist atmospheric condition, absence of extremes of heat or cold and dry winds. The glacial deposits of sand and gravel are abundant. Cement of the best quality is manufactured in unlimited quantities in the section close to desirable sites.

Acting on the belief that the government program for the construction of concrete ships would extend to the Northwest in view of climatic conditions and the availability of materials much preparation was made by private concerns for carrying on the work. This was particularly true of the American Concrete Pipe & Shipbuilding Co., which selected a site at Bryn Mawr on Lake Washington, near Seattle, where a yard was laid out capable of launching five vessels at a time. Construction has progressed on the plant to the extent that work of laying keels could be started in 30 days. L. Y. Stayton, of Tacoma, who has been manufacturing concrete pipe for the past 20 years, is president of the company. This concern has made the Emergency Fleet corporation an offer to construct thirty 7500 to 10,000-ton hulls on 36 months delivery, three of the hulls to be built at cost, also to build 10 tugs and 10 barges to be delivered within this time. The company also recently bid on two 2000-ton and two 1000-ton boats for French interests.

Against this offer Emergency Fleet officials claimed that labor could not be had for the work; that if it was secured it could not be housed and if housed it could not be transported. The further claim was made that engines, boilers and ship fittings could not be secured.

Port cities of the Northwest are

thoroughly alive to the industrial development that has been taking place and the prospects of large gains in commerce to come after the close of the war. Seattle spent $6,000,000 on her port facilities and is spending $4,500,000 more. At a recent election Portland voted overwhelmingly for a charter amendment that will permit a bonded indebtedness of $5,000,000 for harbor improvements. Among these improvements is to be a 12,000-ton dry dock, enlargement of some of the piers already built and the erection of coal docks. Tacoma, Wash., has voted for a port district and will make extensive harbor improvements. Everett, Wash., also is proceeding to provide port facilities.

Export Expansion

Another outcome of Northwest advancement is the preparations being made by steamship companies to handle the great growth in trade that is anticipated. Frank Waterhouse & Co., of Seattle., has formed a combination with the Japanese shipping interests, Iwai & Co., Ltd., of Kobe, Japan; I. Shii, of Kobe and Senda, and Barnet & Co., Ltd., of Calcutta. It is also announced that the Japanese house of Suzuki & Co. will place a new line of steamships in operation between the Orient and Seattle and has appointed the Waterhouse company as general shipping agents for all the Pacific coast ports of the United States and Canada. The International Shipping Co., of Kobe, formed by the merger of the Waterhouse and Japanese interests is recognized in the shipping worlds of Asia and America as one of the strongest combinations of capital in the Far East. It is incorporated on a basis that will enable it to operate in every branch of merchant marine activity.

Another important merger of steamship companies, having in view the better handling of Pacific trade, was brought about when the right and title to combined fleets of the Pacific Coast Steamship Co. and the Alaska Pacific Navigation Co., numbering 22 vessels, was acquired by the Pacific Steamship Co., known as the Admiral line, of which H. F. Alexander is president. The headquarters and general offices of the Pacific Steamship Co. are in Seattle and practically all of its 22 ships are operated out of this port.

While preparations are going forward in the way of installing additional equipment and otherwise increasing facilities for a continuation of Northwest industry, port facilities and ocean carriers are being made ready for the commerce that is to flow in and out of its ports. Even with the strict embargo in force the growth of foreign commerce in the Northwest has been steadily gaining. An illustration of this is the fact that while the foreign commerce of the port of Seattle in 1917 was $420,000,000, this year it is running far beyond the $500,000,000 mark. Other ports show proportionate gains, hence the eagerness to make ready for the future.

It is assumed that the government shortly will modify the present import and export license system and that arrangements will soon be made to move the vast amount of Oriental freight congested in Northwest ports, particularly at Seattle. It is assumed that this port will be selected as the chief center for shipment of supplies that will rehabilitate Russia, and that through it will be handled much of the extensive commerce to be developed with that country, particularly with Siberia.

Seattle and Tacoma, Wash., are adding extensively to their power facilities and private interests are greatly augmenting the supply of current at Portland, while at Spokane the chief operating company has large additions under consideration. An industry which will be a large user of electricity will be the steel plant which B. L. Thane, manager of the Alaska-Gastineau mine, and strong financial interests of San Francisco and New York, propose to erect on Puget sound. The use of electricity in the operation of sawmills is steadily growing and by July 1, 1919, it is anticipated that the Chicago, Milwaukee & St. Paul railway will be operating its trains electrically through the Cascade mountains in Washington, from Othello in eastern Washington, to Tacoma and Seattle, about 220 miles.

New plants are being started, and existing industries provided with new equipment as an indication that the section is not to return to prewar conditions. The Western Iron Works, of Spokane, have purchased a site at Anacortes, Wash., with a view to erecting a foundry, machine shop and brazing works. This company will also construct farm tractors. The Smith & Watson Iron Works, Portland, are doubling office space, installing new lathes and constructing a carpenter shop and blacksmith shop.

In Seattle plans have been prepared for construction of a heavy-timbered smelter building on the seventh slip of commercial waterway district No. 1 for the Smelters Steel Co. Electric furnaces will be installed for converting ore into pig iron by the electric process. Ore will be brought from the company's mine in British Columbia. It is expected the first furnace will be in operation about Feb. 1, 1919.

Pig Iron Shipments Slow

The pig iron situation is not satisfactory. Although allocations have been made covering the balance of 1918, only a small portion of the iron has been shipped. There is also complaint as to the quality. The dealers say that the amount in transit is limited and that the freight differential just going into effect will cause further hardship. The southern Tennessee freight rate is $16.80 to Seattle and the rate from Birmingham to Seattle is $15.50. The furnace shipping from Tennessee would have to absorb the differential in freight between Birmingham and Tennessee of $1.30 a ton. It will, therefore, be to the advantage of the Tennessee furnaces to ship by shorter hauls rather than to the coast. A protest will go in on this point.

Export business is not active. The steel bar market is very quiet in Japan. Iron bars are quoted around $3.50, mill, with 85 cents freight to Seattle. A small amount of tonnage is being sold. Practically no mild steel bars are being sold. Some shell discard steel bars are being sold at $3.75, mill, plus 85 cents freight to Seattle. Sales of cast iron pipe are practically nil. Brass and copper tubes are running about the same as for the past two months. Both deliveries are fairly prompt, the government prices prevailing.

Resume of Internal Gears

Advantages and limitations of the internal gear compared with other forms of transmission, are thoroughly treated in a book recently published by the Fellows Gear Shaper Co., Springfield, Vt. The internal gear might be described as an external gear turned inside out. The turning of the gear teeth changes the action of the teeth, the length of the line of action is increased and the teeth come into and go out of action with less slippage and with a better rolling action. This type of gear is especially suited for rear-axle drives, reduction gear mechanisms and for clutches, of the friction disk and coupling types.

Owing to the fact the length of tooth contact is greater between an internal gear and pinion, the sliding action between the teeth is much less. As it is evident that the sliding action of one tooth over another causes friction, and friction results in wear, a reduction of the sliding action tends to produce a better rolling action between the teeth as they come into and go out of action. Not only does the increase in length of tooth contact and the reduction of sliding action give better efficiency, but it also produces a quieter action. The action between an internal gear and pinion and an external gear and pinion rotating in mesh with each is different. The pinion and internal gear roll into action with practically no jar as they come into and go out of mesh.

Another advantage of the internal gear, is its application to clutches and couplings as used in automobile and truck transmission. The conventional method of machining the internal gear and the direct-drive pinion, is to drill and ream a series of half holes to form the teeth in the internal member, the other member having mating half-round projections produced by milling. Interchangeability of the parts is difficult to accomplish owing to the methods used in producing them. By changing over from half round projections to involute gear teeth, the objections are at once removed, and greater accuracy and interchangeability obtained.

With careful machining it is possible to get a fairly close fit between the two members when they are new, but this fit does not long remain. As soon as the members are put into active service, the corners are broken and immediately a loose fit between the two members results. Involute gear teeth remove this objection. Here, a bearing can be obtained for practically the entire length of the tooth face, giving maximum service and eliminating the objectionable "backlash." A fit between the two members can be secured so that they can be slid back and forth on each other without extreme shake, and at the same time be interchangeable.

Confidence Rules in British Market

Buying of Raw Material Continues Brisk, Demand Exceeding Supplies of All Special Lines—Shipbuilding Goes on at Top-Notch Speed—Potash to be Recovered on Great Scale

Bureau of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., Nov. 15.

THE market for raw material has not been affected by the war situation, stimulated as it has been by daily sensations as one antagonist after another withdrew from the war. No department of the iron trade is more confident than that of raw material. Buying is as brisk as ever, consumers having no doubt that they can utilize all the pig iron they are likely to get for the next year or more. They would be glad to double their orders if this in any way would improve their supplies.

All special lines are in great demand and cannot be supplied in sufficient quantities. The foundries are still large consumers of the better class of material and there is no probability that this branch will be affected for some time.

Machinery will have to be renewed, especially mill equipment which has been in use practically all through the war, while the shipbuilding yards must make great demands on the foundries for marine engineering, until the serious shipping shortage has been overcome. In the north of England a good export trade is maintained. In the Cleveland district buyers were quite ready to take the largest possible allocations for November. East coast hematite is produced in somewhat larger quantities but is nearly all absorbed by the home steel works. Fairly large supplies of west coast hematite are being sent to Scotland and the Midlands to meet the substantial demands for steel castings, this continuing to be an important branch of foundry business both on the Clyde and in the Birmingham neighborhood. Such centers as Nottingham and Derby are making substantial contributions to the cast steel output. The improved shipping situation has facilitated better imports of foreign ores, while fuel supplies with the same urgency as supplies to the furnaces have somewhat improved.

A deputation of gas strip makers recently conferred with the minister of munitions in London to ask for an advance. The makers previously furnished particulars relative to their cost of production and the ministry authorized an advance of 15s ($3.60) per ton dating back to Oct. 1, and making the price of bars £16 ($76.80) per ton, with an increase of 5s ($1.20) per ton on all extras, the effect of which will be that the 5s ($1.20) previously charged for extras covering generally specially large widths will be raised to 10s ($2.40). The trade asked for a general advance of £1 ($4.80) per ton.

The British Metal Corp. has been registered with a nominal capital of £5,000,000 ($24,000,000) in 500,000 shares of £10 ($48) each. The company will deal in ores and metals and may engage in any other metallurgical operations. It may also do business as financiers, promoters, concessionaires, bankers, merchants, shipowners, etc. It is understood that the company has large plans in connection with syndical selling of metals somewhat on the scale of the familiar continental cartel and selling agents.

An important subsidiary line for the blast furnaces has been developed by the evolution of a plan for recovering potash on a commercial scale from the blast furnaces. For a long time Germany had the monopoly of the potash supply. But the possibilities of obtaining potash from blast furnaces were brought some time ago before the ministry of munitions, with the result that at various furnaces gas-cleaning plants have been installed for the extraction of potash-bearing dust from the furnace gases. Some of these plants are already in operation, while others are in course of construction.

The government is not pressing so urgently for supplies, although works engaged on shipbuilding material find no sign of relaxation in business. Numerous exporting merchants have been inquiring as to the prospect of the execution of oversea business they are prepared to place. Included in these inquiries are some from America for ship plates, said to be required for Canadian and Australian shipyards, as well as for Japan. Much of this material was formerly shipped direct from this country and it is assumed that America is now no longer able to handle without assistance from this country the business in shipbuilding material diverted westward during the war.

As everyone knows, the British galvanized sheet industry, formerly one of our great exporting lines, has been in suspense, and numerous shops were entirely idle, the men engaged in this industry having gone into other lines. Within the past few weeks these factories have been showing increased activity. Some of the galvanizing pots are already in active service and others being made ready. Some big overseas contracts are on offer, when the shops are ready to undertake them, and as war exigencies have not yielded any substitute for the coating of spelter as a protection against rust it is assumed that this trade will, when export restrictions are removed, resume its former importance.

For the present one obstacle is the shortage of acid, and the sheetmakers are not yet able to obtain the large quantities of sheet bars needed before sheets can be turned out in volume. Such bars are, however, coming forward rather more freely, although the government still commandeers nearly all the output.

Among other foreign business on offer are substantial lines in gas tubes. This business has led to some pressure upon makers of gas strip for heavier deliveries from the mills. A lot of wire trade is on offer but for the present the wire mills are restricted almost wholly to production for the government. Scrap is much in demand, chiefly for government consumption.

The shortage of fuel is a chronic trouble for which no relief is as yet forthcoming. Despite the insistent demand many works are unable to start until Tuesday or Wednesday each week for want of coal.

Britain is in Race for Control of Shipping

WHILE American shipping interests are congratulating themselves on their relatively advantageous position for a resumption of overseas commerce on a vast scale, British shipbuilding and transportation companies are not losing time in their efforts to re-establish their supremacy as a maritime nation. The demands of the British government are slackening, except for material entering into the building of ships in which industry there has been no relaxation of supreme effort. England is well along with plans for meeting competition in that trade war which economic experts have said must follow the great war for civilization. At the recent annual meeting of Furness, Withy & Co., Ltd., a glimpse of the British enterprise was given by Viscount Furness, who related that the company had taken steps some time ago to prepare for after-the-war commerce. Eight months ago a site about 90 acres in area, some of it 15 feet below highwater level, was obtained on the River Tees. Within two and one-half months the keels of the first two steamers were laid and today the company has seven building berths in operation, and is building a fitting-out basin capable of accommodating six large vessels. The yards are particularly adapted for the rapid construction of large and fast vessels up to 650 feet in length.

It was announced that the company's dividend distribution for the year amounted to 20 per cent. Viscount Furness declared that the Blue Book rates for hire for steamers was insufficient and that the earnings were only approximately one-seventh of those for the previous year.

No Trade Advantage for Germany

American Industrial Leaders Demand Teutons be Compelled to Rebuild Shattered Nations Before Re-embarking on Own Selfish Enterprises—War a Draw if Only Money is Demanded, Declares Economist

Will Germany Get Away With It?

THE war may yet end in a draw, declares a noted economist. Contrary as this view is to the general impression, with Germany's armies defeated in the field, the fact remains that so far as the adjustment of economic advantages are concerned the war is not ended, and a great deal depends upon the final settlement. The economist based his opinion on the fact that many of Germany's enemies lie prostrate while Germany is intact, prepared to push her campaign for world trade dominion. France with all the mineral wealth of Alsace-Lorraine is still in a less advantageous position than Germany because France's industrial machine has been shattered.

"We speak of boycotting German goods; we take oath that we will never buy an article with 'Made in Germany' stamped on it, but we forget that we are not the only buyers and that the 'Made in Germany' mark may be omitted when it is considered more of a liability than an asset," said the economist. "Also," he continued, "after peace has been proclaimed an article that Germany may offer in the American market for 50 cents will sell more rapidly than a similar article made by an American manufacturer, costing a dollar. How long do you suppose American manufacturers could stand that sort of competition?"

He said the word that is to enter largely into the deliberations of the peace congress—competition. To what extent will the allies permit Germany to take advantage of her industrial situation to rebuild her fortunes, and, perhaps, prepare for another war, while her enemies must recoup before they can hope to compete with her? Shall the victory be made secure, or shall the war be called a draw? It is one of the most important points for discussion at the peace table, one of those on which the German plenipotentiaries may out-maneuver the allies, unless public opinion makes itself plainly heard.

In the Nov. 14 issue of THE IRON TRADE REVIEW, *L. H. Miller, structural sales engineer, Bethlehem Steel Co., at Cleveland, discussed this important question. He took the stand that Germany should be compelled to rebuild all the areas she devastated before she is permitted to engage in enterprises for her own benefit; in other words that she be not permitted to toss a coin to those she has grievously outraged and ride on to other conquests.*

To obtain the views of others on the subject THE IRON TRADE REVIEW *sought opinions on the subject from a number of men identified with the iron and steel and related industries. Quickly came the response: "Germany must be given no advantages over those whom she despoiled."*

These views may enter largely into the reconstruction congress called by the United States Chamber of Commerce in Atlantic City, Dec. 3-6, when the representative manufacturers and business men of the nation convene to discuss the trade and industrial situation and to make suggestions for the government on vital issues. They afford a clear view of what leaders of American industry think on the subject. Several of them follow.

By J. G. Butler Jr.

Youngstown, O.

NO one can tell as yet what may be expected from Germany. We know only that it is the one country in Europe whose industrial plants are in working order and least upset by the stress of war. For many years the making of war material was a most important part of the industries in Germany, while in England and France nearly all other forms of production had to be abandoned when war was declared. Germany was probably able to meet the demands of the struggle for munitions with far less disturbance to her industries than was suffered in either France or England, while in Belgium and other countries practically all industries have been destroyed.

We shall need to guard against the competition of Germany, even though the terms imposed on her may be as harsh as they should be. I do not believe that the German people are entitled to any great consideration. Unless their markets are restricted with much care they will make such use of the advantage they hold through having avoided invasion that competition from them may make the gradual readjustment of conditions much more difficult. Of course, Germany's production of iron and steel will be limited somewhat by the loss of the French ore fields she has had to surrender, but those were really necessary only for her dream of expansion, and failure to hold them will not sensibly reduce her production of these commodities beyond the Rhine.

Perhaps one of the most effective methods of meeting the situation is the development of our merchant marine. I have been advocating this policy for more than 25 years, and it is a source of gratification to me to know that war conditions have overcome the political caution which prevented the United States from taking her place on the high seas. It is fortunate for us that this crisis finds other nations busy with large problems, since otherwise even the greatest effort to build ships would now be too late. As it is, the policy of building a creditable merchant marine in the shortest possible time will help to solve the problem confronting our industries by making possible the extension of our export trade during the time when competition from countries where wages are far below our standard would be a serious matter.

We are facing an era of great prosperity. Demand for manufactured products at home and abroad must be enormous, at least as soon as the consuming public is convinced that lower prices are not in sight. Consumption delayed by the war, together with the natural growth of the country during its continuance forms a reservoir from which business enough to keep our mills and factories busy will flow steadily as soon as it starts.

There is, owing to our improved financial system, little danger of over-expansion of credits, the situation from which panics invariably come. Everything points to a gradual adjustment that will end with American industries at the top notch of their already astonishing growth.

All this depends on wise and conservative handling of the problems involved, and the recent congressional elections assure us of that. It may be regarded as extremely fortunate that these elections put a check on certain tendencies which could not have been otherwise than dangerous and which had already given the thoughtful much cause for pessimism.

The stabilization of prices until such time as a proper

balance is again secured between peace and war demands is probably the most important. Present prices cannot be sensibly reduced until production costs, especially labor and war taxes, have been readjusted. This cannot be done without great hardship except slowly and gradually. For this reason I believe that government control of prices should continue, and that a minimum rather than a maximum should be maintained for some time to come. This is because the danger of profiteering arising from the excessive demands of war has passed, while the danger of price cutting that would necessarily involve a sudden readjustment of wages has to be guarded against. Those manufacturers who would prefer to maintain wages cannot do so in the face of competition, either at home or abroad, by others who may be willing or able to reduce wages. It will be plain that any material lowering of wages before costs of living are lowered would lead to distress and disturbance in the industrial world.

In addition to maintaining prices, the government should still further stabilize conditions by providing a tariff that will take into account the tremendous changes of the past four years, with the splendid efforts to produce here many important things that were formerly regarded as necessary imports. At the same time the tariff should be productive as well as protective. It should aid production and not decrease consumption.

MAKE GERMANY PAY FULL PENALTY

By George M. Verity

President American Rolling Mill Co., Middletown, O.

WE have now abundant evidence that Germany planned and carried on the war in the most cold-blooded and barbaric manner, as a gigantic business proposition intended to enrich her government and her people at the expense of other nations.

She was to grow strong while they became weak, beaten to their knees by an overwhelming force of inhuman military brutes, trained as such from childhood not only by their government but by their MOTHERS and their PREACHERS.

Why should Germany escape the full penalty of her crimes just because she happens to be the boldest, the most brazen and brutal "breaker of law" that the world has ever known? It would be the very acme of justice to require of her defeated army the physical rebuilding of every devastated country before she should again enjoy commercial intercourse with civilized nations.

We must be humane in our treatment of the German people. We may be willing to provide them with necessary food and other material aid, but we can never have anything but contempt and loathing for this generation which has supported its military leaders in their hellish plans up to the very limit of its ability.

The German people only went back on their government when it was proven that their policy and plan was an absolute failure, and they did it more to save their own selfish hides than for any other reason. There is no repentance in Germany; they are just as arrogant and brutal in their ideals today as they ever were. The fact remains that the Germans were brought to their knees through splendid military strategy and through the indomitable will of the best brain and brawn of the civilized world.

Germany had been planning a military campaign for 40 years. As against that England and America created great armies in a marvelously short time. It is a well established fact that the kaiser's best trained shock troops were not a match for our first batch of green Yankees at Chateau Thierry.

No man or woman of Germany who has had anything to do with the prosecution of the war should be permitted to set foot on allied or American soil for many years. They should be punished by being quarantined at home and made to live by themselves until a new generation has been born and educated as civilized beings.

It would be adding insult to injury to allow Germany immediately to profit commercially through the use of her uninjured industries, while her neighbors, although victorious, lie stricken at her feet.

How can there be respect for or enforcement of law without JUSTICE, and JUSTICE demands reparation and restoration covering both property and commerce.

At the end of this, the greatest of all world tragedies, to allow our sympathies and our kindly instincts to get the better of our judgment, would not only be thwarting justice, but would be to forget those millions of brave youths, Belgians, French, English, Canadians, Italians and Americans, who lie over yonder "where poppies bloom."

GIVE GERMANS CHANCE TO PAY

By James Bowron

President Gulf States Steel Co., Birmingham

I BELIEVE the able men who will sit at the peace table will make adjustments which will fulfill the demands of justice and will not allow German manufacturers to take advantage of the ruthless destruction and spoliation of their neighbors, whose territory they invaded.

It would be perfectly proper for claims to be filed in every city, town and village which has been invaded, specifying with as much detail as practicable the specific items of plant, machinery, tools, equipment and materials which have been carried away from factories and mines; the furniture and personal property of every description stolen from warehouses, stores and dwellings; and also separately the estimated amount of damage caused by acts of wanton destruction.

The German government should be required to replace all these items individually and categorically so far as they are in existence and can be identified, and to pay in money for material at prewar prices for such spoliation and destruction as cannot be restored in kind.

I do not agree that German trade should be fettered and that they should be forbidden to work for their own advantage. They must make enough money to pay their own expenses and to earn the enormous amount of money which they will have to pay for the purpose of reparation of the provinces they have devastated.

It would be perfectly proper for the allies to demand that Germany replace the machinery that was broken or stolen in France, Belgium, Serbia, Italy or Poland and if Germany cannot do this then the allies could demand that she pay for it in money. If Germany elects to make the equipment let it be restored and credited at prewar prices on the total bill of damages.

If it be found that northern France or any parts of Belgium cannot obtain a supply of coal for a year and a half because of wanton destruction by the Germans of their local coal mines let the Germans be required to furnish the equivalent output of those mines at prices delivered to the French and Belgian consumers equivalent to the normal delivered price of the French and Belgian coal. In other words, the Germans should be required as far as possible to restore to all sufferers by their wicked actions, the status quo ante bellum.

Labor Department to be Readjusted

Committee Named by Secretary Wilson to Outline Plan for Changing Department from War to Peace Basis—Means for Replacement of Workers Also Studied—Eight Services, Two Boards in Operation Now

WASHINGTON, Dec. 3.—To change from a war to a peace basis the department of labor will undergo a complete reorganization. Secretary of Labor Wilson has made it clear that during the reconstruction period the department will be readjusted on a large scale. The secretary has appointed an advisory committee consisting of heads of the various branches of the department to work out the details. Louis F. Post, assistant secretary of labor, has been made chairman. Other members are A. W. Parker, chief law officer, bureau of immigration; Roger W. Babson, director of the information and education service; Grant Hamilton, director of the working conditions service, and Miss Mary Van Kleeck, director of the women in industry service.

Just as an advisory committee, headed by ex-Governor Lind, of Minnesota, nine months ago charted for the department of labor the plan for recruiting and distributing labor, so will the committee determine what part of the organization should be readjusted and continued permanently.

The department of labor now has eight services and two boards which were created during the war. These are the United States employment service; women in industry service; training and dilution service; working conditions service; inspection and investigation service; information and education service; labor adjustment and industrial housing service; the national war labor conference board and the war labor policies board.

The United States employment service now has 900 branch offices and 4400 employes. This agency carried on a nation-wide campaign to recruit labor for war work, part of the effort being to transfer workers from the nonessential to the essential occupations. While 2,500,000 workers were directed to war industries in 10 months, the task now confronting the service is to aid in putting back into industry the 2,000,000 soldiers returning from Europe, the immense army at home which has been training for overseas, and the civilian war workers.

The powers of the war labor board, created to adjust controversies between employers and employes, up to Nov. 1 had been invoked in 531 controversies, involving more than 2,000,000 workers, and on this date had 266 cases pending.

The need of the war labor policies board arose when the federal government became the greatest employer in the country. Its task has been to regulate the relations of services and bureau in other departments and to recommend to the secretary unified labor policies to harmonize the industrial activities of the various branches of the government. Among its problems have been the elimination of labor turnover, adoption of uniform standards, wage stabilization and profiteering.

Canada is Organizing to Provide Jobs for All

Toronto, Ont., Nov. 30.—A national system of labor employment offices, co-ordinated through the federal department of labor, is being organized in Canada. Local offices will be established in all important industrial centers. In the larger cities there will be separate offices for skilled and unskilled labor. These offices will report daily to a provincial clearing house the number of workers unplaced and the situations unfilled, and on the clearing house will fall the duty of filling vacancies in one part of the province with unemployed workers from another part. There will be central clearing houses at Ottawa and Winnipeg. When the provincial clearing houses find that there is still a deficiency or a surplus of labor the central clearing houses will try to locate the surplus labor or secure the labor required in other provinces. The Winnipeg clearing house will have jurisdiction over the western provinces and that at Ottawa over eastern Canada. This plan will secure for the government accurate information as to the demand and supply of labor throughout Canada; the extent to which private industries are furnishing work for returned soldiers and demobilized war workers, the volume of public employment that must be provided to take up any surplus and the localities and trades in which such employment is required.

A national advisory committee to be called the Employment Service Council of Canada will be formed to administer the entire organization. The federal department of labor will appoint three members of this body two of whom will be women; the provincial governments will appoint one member each, and other bodies represented will be the soldiers' reestablishment department, the Great War Veterans, Canadian Manufacturers' association, Trades and Labor congress, railway war boards, railway brotherhoods and Canadian Council of Agriculture. A provincial advisory committee will also be appointed in each province.

The number of workers employed in munition plants in Toronto when the armistice was proclaimed is estimated at 25,000, of whom about 6600 have already been laid off, most of those discharged being foreigners or unskilled laborers. They are readily finding employment.

The plant of the Toronto Structural Steel Co. at Weston, a suburb of Toronto, which has been manufacturing shells, has been purchased by the Massey-Harris Co., which will transfer to Weston the manufacture of gas tractor engines and cream separator machines now carried on in Toronto. The equipment of the new plant will be completed by the middle of December, when it will provide work for about 1000 men.

Labor Board Overrules No-Jurisdiction Plea

The national war labor board has taken jurisdiction in the complaint of employes of the Minneapolis Steel & Machinery Co., that the company has discharged men for joining a labor union and is paying inadequate wages. The company questioned the board's jurisdiction on the ground that 90 per cent of its work is done under contracts for the war department which provides for settling labor disputes other than through the war labor board, and that in assuming jurisdiction the board would be compelling the company to deal with a labor union, contrary to its established policy before the war.

The board quoted from the President's proclamation creating the board as follows: "The board shall refuse to take cognizance of a controversy between employer and workers in any field of industrial or other activity where there is by agreement or federal law a means of settlement which has not been invoked." Continuing, the board said:

"The contract between the war department and the company provides that if labor disputes shall arise directly affecting the performance of the contract, causing or likely to cause delay in the deliveries upon the date or dates specified, the contractor shall address a written statement to the chief of ordnance, for transmission to the secretary of war, and it is stipulated that the secretary of war may thereupon settle, or cause to be settled, such dispute.

"This is not a means of settlement by agreement which comes within the limitation of the board's jurisdiction above quoted. The agreement there indicated is an agreement between the employer and the employes. The employes were not a party to the contract between the war department and the defendant, and are not affected by it. The provision was intended to protect the war department.

"The ceasing of hostilities has no effect upon the war labor board's present jurisdiction."

A coroner's jury, in Pittsburgh, has rendered a verdict of accidental death in connection with the asphyxiation of 25 employes of the Jones & Laughlin Steel Co. at its Eliza furnace on Nov. 9.

Easier State

Shown In Refractory Prices—New Specifications Are Prepared

Pittsburgh, Dec. 3.—Ending of the war has brought quite a few cancellations of orders to the manufacturers of firebrick and as there has been insufficient new business to take up the slack, prices are a shade softer than they were recently. The weaker tone is not seen in an out and out cut in quotations, but at least it is easier to buy than to sell at the prices. Manufacturers are not looking for a big or sharp decline in prices. It is pointed out that stocks are comparatively light even including the production released through the suspension of construction started at the behest of the government.

It also is asserted that labor makes up a very considerable part of present prices and only through a downward revision of labor costs will it be possible to make much of a cut in selling prices. The influenza epidemic was not an unmixed evil, at least, not from the standpoint of the manufacturers, for it brought a reduction in output only a short time before the signing of the armistice put the brakes on the demand. In Pennsylvania, depletion of working forces practically cut the production in two.

Regular producers of firebrick are looking forward to the future with a fair amount of confidence. One reason for this condition is found in the fact that the manufacturers of paving, face and terra cotta brick, who generally took up the production of firebrick during the war, now are getting back to their former lines in anticipation of a building boom next spring.

New government specifications of heat duty brick have been prepared by Dr. A. V. Bleininger, chief ceramic chemist of the United States bureau of standards, Pittsburgh, and have been approved by the committee of the refractories industry on standards. These specifications now are in the hands of Charles Catlett, chairman of the refractories section of the chemical division of the war industries board and the trade awaits their approval and publication. This is probably among the other matters to be presented at the meeting of the industry in Atlantic City, N. J., this week, in connection with the industrial after-the-war preparedness conference. A meeting of the refractories industry also is to be held in St. Louis around Dec. 15.

Refractories

(Per 1000 f. o. b. works)

FIRE CLAY BRICK (First Quality)	
Pennsylvania	$45.00 to 55.00
Ohio	45.00 to 50.00
Kentucky	45.00 to 55.00
New England	55.00 to 65.00
FIRE CLAY BRICK (Second Quality)	
Pennsylvania	$40.00 to 50.00
Ohio	35.00
New England	48.00 to 58.00
SILICA BRICK	
Pennsylvania	$50.00 to 60.00
Chicago	55.00 to 65.50
Birmingham	45.00 to 55.00
MAGNESITE BRICK (Per Net Ton)	
9 x 4½ x 2½	$105.00 to 115.00
CHROME BRICK (Per Net Ton)	
9 x 4½ x 2½	$130.00 to 140.00
BAUXITE BRICK (Per Net Ton)	
55 per cent.	$ 40.00 base
76 per cent.	100.00 base

Issue History on McKinley Birthplace Memorial

Iron and steel and the achievements of the men of that industry are woven intimately into the story of the National McKinley Birthplace Memorial, which is set down in historical form in a handsome volume prepared and just issued by the trustees of the memorial. The progress of the movement from its inspired conception at a commercial banquet in Niles, O., in 1910, through its period of development and finally to its beautiful realization as an event of national interest seven years later, is recorded in the words of those most closely associated with the enterprise. The book refreshes the understanding why William McKinley became a champion of the best interests of the iron and steel industry and therefore of all American industry. It is shown by the several close studies of his life therein presented that ironmaking entered very intimately into his early environment. His father was a founder and manager of blast furnaces and his youthful years were spent among scenes where ironmaking was struggling to establish itself as a permanent industry. It is singularly fitting therefore that iron and steel men in a leading way should have made possible the paying of due recognition and homage to his work and memory. The names of Joseph G. Butler Jr., president of the board of trustees; of W. A. Thomas, president of the Brier Hill Steel Co., also a trustee; of H. C. Frick, Chairman E. H. Gary of the United States Steel Corp., Andrew Carnegie, Jonathan Warner, and others, are brought prominently into the history. The new volume contains reproductions of the various addresses delivered at laying of the cornerstone and at the dedication ceremonies, of the bronze busts and tablets which have been placed in the memorial, half tones of McKinley's birthplace, of the memorial itself and of those figures which have been identified conspicuously with the origination, planning and financing of the enterprise. At the end appears a brief history of the development of the Mahoning valley as one of the leading iron and steel centers of the country. The volume has been printed by the Penton Publishing Co., Cleveland, and is being offered for sale by the trustees at a nominal price.

Two impact machines for testing the power of explosives have been perfected by the bureau of roads of the department of agriculture for use of government arsenals.

Swift Drop

Shown in Price of Toluol—Peace Restores Commercial Use

New York, Nov. 30.—The price of toluol dropped sensationally this week. This product now is quoted at 25 to 30 cents per gallon at producers' plants, compared with $1.50 to $1.55, the government prices before the war industries board ceased its control of the market early this week. This drop of more than 80 per cent in the price is due to the fact that the ending of the war has relieved the tremendous scarcity of this product. Now that the war is over, toluol again will be used almost exclusively as a solvent rather than for its chemical properties, and the demand which was to a large extent discontinued during the war will have to be redeveloped.

Considerable business in solvent naphtha was done during the past week. Good spot sales of this product were made at 20 to 25 cents per gallon at producers' plants. Considerable spot business also was booked in benzol. Pure benzol continues to be sold at 22 to 27 cents per gallon at producers' plants.

Although it again is possible to obtain licenses for exporting phenol, the demand for this product has fallen off. Numerous export inquiries are out but very little anxiety is shown to close them. The phenol market is quoted at 40 to 44 cents per pound at producers' plants. Some contracting for delivery during the coming season continues to characterize the naphthalin market. Naphthalin in balls continues to be quoted at 12½ cents per pound at producers' plants.

The government has ordered the discontinuance of deliveries on its contracts for sulphate of ammonia. Hence, all of the output again is available for commercial consumption. As is the case in practically all of the coal tar products markets, consumers are not showing any great anxiety to place orders at this time, since they know that the supply from now on will be ample, and hence they feel sure they have nothing to lose by following a waiting policy.

Coke Oven By-Products

Spot	
Per Gallon at Producers Plant	
Pure benzol	$0.22 to .27
Toluol	0.25 to .27
Solvent naphtha	0.20 to .25
Per Pound at Producers Plant	
Phenol	$0.40 to .44
Naphthalin, flake	0.10
Naphthalin, balls	0.12½
Per 100 Pounds at Seaboard	
Sulphate of ammonia	$4.75
Contract	
Pure benzol	$0.22 to .27
Toluol	0.25 to .30
Solvent naphtha	0.20 to .25
Per Pound at Producers Plant	
Phenol	$0.40 to .44
Naphthalin, balls	0.12½
Naphthalin, flake	0.10
Per 100 Pounds at Seaboard	
Sulphate of ammonia	$4.75

Removing Bars to Export Trading

Many Iron and Steel and Machinery Products Removed from Conservation List —Joint Regulation of Priority and Permit is Revoked—Unexpired Licenses as of November 15 Are Held Valid

WASHINGTON, Dec. 3.—Removal by the steel and priorities divisions of the war industries board of restrictions which had been made to conserve materials and increase war production, has also resulted in considerably lessening of the grip held by the war trade board on exports. Many iron and steel products have been removed from the export conservation list, modification has been made in the description of others and the joint ruling of the war trade and war industries board on the interrelation of export licenses and priority-preference-permit has been revoked. The war trade board has also announced its policy as to the validity of export licenses.

Vance C. McCormick, chairman of the war trade board, has declared that the board, in co-operation with the allies, will relax every restriction which does not conflict with the policy of conserving ocean tonnage in supplying and bringing home the American forces abroad, in protecting and furnishing materials for the allies and devastated regions of Europe and Asia, and in serving the neutrals whose requirements, like the domestic American needs, were subserved to the more essential war necessities. Mr. McCormick says that "when this work has been done international trade can be quickly restored."

Withdraw Priority Regulation

The war trade board has announced the withdrawal of the joint regulation of the war industries board, of Oct. 28, 1918, in which provision was made for the handling as a priority-preference-permit certificate of such steel export licenses as the trade board might issue. Exporters of steel no longer are required to accompany their application for export license with supplemental information sheet X-26. Applications for the exportation of steel will be considered upon their respective merits without regard to position on the producers' books. The matter of priority on such products is to be settled by the manufacturer in his own way and as stipulated in the contracts he will obtain.

As to the validity of export licenses, the board has ruled that, with certain exceptions, all export licenses issued on or after Nov. 15, 1918, and all export licenses which were unexpired on Nov. 15, 1918, will be valid until used unless revoked, notwithstanding such licenses are stamped as expiring on Nov. 15, or a later date. Collectors of customs and the postoffice department have been advised accordingly. They will accept these licenses when the expiration date is specified on the license as Nov. 15, 1918, or later.

This new ruling does not apply however to licenses for the exportation of any commodity to Norway, Sweden, Denmark proper, European Holland, Iceland, Faroe Islands, or Switzerland. Collectors of customs and the postoffice department will not accept licenses for the exportation of any commodity to such countries except in accordance with the regulations with respect to the expiration date of export licenses. The regulations with respect to the preparation and filing of shipper's export declarations remain in effect.

The modifications made by the board in the description of plates, shapes and rails are of importance. Plates on which license is required now are described as "all classes, one-quarter of an inch thick and heavier and wider than six inches or over six inches in diameter." The description of rails and splice bars has been changed to read "rails, over 50 pounds per yard." Shapes, including angles, channels, tees and zees, requiring license for export are those "three inches and larger."

The list of iron and steel and machinery articles removed from the conservation schedules is as follows:

MACHINERY, TOOLS, ETC.

Aeronautical instruments; aeronautical machines, their parts and accessories; anti-aircraft instruments, apparatus and accessories; band-saw blades; blades, saw (circular, hack and band); blast furnaces, open-hearth; boilers, as follows: Marine, ship; boring machines (horizontal and vertical); boring mills (vertical, all sizes); cable, stud-link chain; calipers; cars, railway (completely assembled and unassembled and parts thereof); chain, as follows: All iron and steel chain, either welded, cast or stamped; chronometers; chucks, drill; chucks, lathe; circular saw blades; comber needles; compasses, ships'; condensers; dental instruments; drill chucks; drilling machines, radial; drills, as follows: Carbon and high-speed twist, twist; engines, marine and parts (individual licenses not required to Canada and Newfoundland for engines of 60 horsepower and under); files, abrasive; fireroom parts, marine; open-hearth blast furnaces; steel furnaces; grinders, internal, plain and universal; hack saw blades; hydraulic presses; lathe chucks; lathes, all sizes; locomotives and parts thereof; horizontal and vertical boring machines; planers; marine boilers; marine engines and parts; marine fireroom parts; marine steam turbines for mechanical drive; micrometers; mills, plate rolling; milling machines, plain and unusual (except hand millers); needles, comber; open-hearth blast furnaces; plate rolling mills; presses, hydraulic; pyrometers, equipment and thermocouples; radial drilling machines; railway cars completely assembled and unassembled and parts thereof; reamers; rolling mills, plate; saw blades, circular, hack and band; sextants, ship boilers; ships' compasses; slotters; steel furnaces; stud-link chain cable; superheaters; surgical instruments; tachometers; thermocouples for pyrometers; tools, as follows: Drill chucks, drills, files, abrasive (see Files), lathe chucks, micrometers, reamers, saw blades, circular, hack and band; turbines, marine steam, for mechanical drive; twist drills.

IRON AND STEEL

Alloy steel; bands, iron and steel; bars, iron and steel (including flats 6 inches wide and narrower); boat spikes; boiler tubes; bolts, iron and steel track; boring tubes (oil well casing); cable (iron and steel, consisting of 6 wires or more); casing, oil well (frequently described as "boring tubes"); cast iron pipe; fabricated structural steel, iron and steel, including angles, channels, beams, tees and zees, and plates ⅛ of an inch thick and heavier, punched or shaped, including tanks made of plates ⅛ of an inch thick and heavier; frogs and switches; high-speed steel; hoops and bands, iron and steel, including hot-rolled and cold-rolled strip steel; mechanical tubes, steel; nails, iron cut; nails, steel wire; oil well casing (frequently described as "boring tubes"); pipe, as follows: Cast iron, iron and steel drive, iron and steel line, wrought iron and steel; poles, iron and steel; railroad spikes, iron and steel; railroad tie plates, steel; rails, 50 pounds per yard and less, and splice bars; rope, wire (iron and steel) consisting of 6 wires or more; sheets, iron and steel, less than ⅛ of an inch thick; skelp, iron and steel; spikes, boat; spikes, steel wire; strand (iron and steel) consisting of 6 wires or more; tie plates, steel; railroad; tool steel; track bolts; tubes, as follows: Boiler, boring (oil well casing), mechanical tubes, steel; wire, iron and steel; wire rods; wire rope, cable or strand (iron and steel), consisting of 6 wires or more.

The removals also include alloys containing tin antifriction and babbitt metals, in bars, pigs and all shapes, unless an integral part of a complete machine and antifriction and babbitt bearings unless an integral part of a complete machine.

President Directs Research for Potash

WASHINGTON, Dec. 3.—The chemicals division of the war industries board at the direction of President Wilson has submitted to the department of the interior the problem of increasing potash production in the United States. Thus an established branch of the government will permanently set itself to the task of relieving the American farmer from the grip of Germany's monopoly on the world's supply of fertilizer material.

Previous to the signing of the armistice, the war industries board had already attacked the problem. Chairman B. M. Baruch appeared before a congressional committee in behalf of an amendment to the revenue bill which would give encouragement to private industries which

would undertake the risk of establishing potash production in this country. The chemicals division, on the other hand, in co-operation with other departments of the government, had turned its attention to the specific task of extracting potash from waste products.

A committee of experts, representing the iron and steel industry of the country and certain scientific departments of the government, was in process of formation, under the auspices of the chemical division, at the time hostilities ceased. Its purpose was to determine as quickly as possible the feasibility from a commercial standpoint of extracting potash from the fumes of blast furnaces.

The production of potash in this country from different sources and its lack of meeting demands has been pointed out in THE IRON TRADE REVIEW. Consumption totals 250,000 tons annually in the United States, while the output last year was only 32,000 tons, and this year it is estimated that the output will be about 60,000 tons.

The war industries board undertook to approach the problem in a larger way, and it is now proposed by arrangement between the chemicals division and the department of the interior for the program to be carried forward by the latter department.

The suggestion of extracting potash from blast furnace fumes is based on the fact that potash in varying quantities is found not only in the iron ores, but in the coke and limestone used in reducing and fluxing the ores. In Alabama the ores are particularly rich in potash. At present this potash is allowed to escape during the processes of making pig iron. Divided into miscroscopic particles, it is carried off with the waste fumes.

Several methods of saving this potash have been suggested by scientists. One of the most feasible appears to be the electric precipitation process devised by Dr. Fred D. Cottrell, of the bureau of mines. This involves cooling the gases as they emerge from the blast furnaces and passing them through a series of sheet steel tubes, eight to 12 inches in diameter. Through the center of these tubes is run a wire, or chain, carrying a high voltage of static electricity.

This electric charge tends to electrify the fine particles of potash dust, causing them to consolidate and drop down the sides of the tubes. A fair-sized installation for this process requires as many as 400 of these tubes through which to pass the gases. It is this process which the Bethlehem Steel Co. has experimented with on a small scale.

At a conference of experts recently held in the office of C. H. MacDowell, director of the chemicals division of the war industries board, the opinion prevailed that it would be entirely feasible to commercially develop a method of extracting the potash from blast furnace fumes, particularly in regions where the blast furnaces are located near ores in which potash occurs in quantities sufficient to insure substantial recoveries. The problems presents many technical difficulties since care must be taken in developing a by-product process not to interfere with the primary output.

The war industries board is of the opinion that it is going to cost much more to produce potash in Germany and Alsace. War taxes, high food costs and other fundamentals, it is pointed out, will bring this about so that it will be a long time before European potash is brought to this country at the low cost prevailing before 1914.

Fire Prevention Section Ceases Its Duties

Washington, Dec. 3.—After seven months of activity the fire prevention section of the war industries board has filed its final report. W. H. Merrill is chief of this section, whose duty it was to investigate conditions as they existed in respect to fire hazard in privately owned property where material machinery or supplies used for war purposes were manufactured, handled or stored.

In 1840 of the 2444 munition plants inspected fire hazard conditions were found good; in 258, fair; in 237, poor and in 109, bad. Improvements were made in 347 plants and are under way in or were recommended for 642 others. Each plant visited consisted of from one to 50 buildings.

In its work the section had the assistance of volunteer experts from various fire insurance companies of the country. Co-operation was secured likewise from a committee of representatives of the treasury, war, navy and justice departments, shipping board, food and railroad administrations and the United States Housing Corp.

The fire prevention section in addition to its plant inspection, rendered expert service on requests received from over 50 departments, bureaus and divisions of the government. This service covered water front fire protection, fire prevention clauses in government contracts, etc.

End New England Coke Embargo

Washington, Dec. 3.—The fuel administration last week took one step and indicated the possibility of taking another, both of which likely will affect coke production. The first was the removal of embargoes on coke to and from New England and the second the statement that price and zone restrictions on bituminous coal probably will be abolished by the middle of the month.

Effective Dec. 1, Fuel Administrator Garfield cancelled the order of May 7, 1918, in which coke shipments through the New England rail gateways were forbidden. This had the effect of forcing the territory east of the New York state line to consume its own coke output. Revocation of the order now will permit shipments from any coke producing point in the country to New England consumers.

The bituminous coal prices, which were fixed more than a year ago and modified later, probably will be allowed to seek their own levels after Dec. 15, Dr. Garfield has said. He has also intimated the zone shipment plans probably will be abandoned on that date. Railroad men in the railroad administration say that elimination of the zones will create a car shortage which, with price control off, will send up the price of coal.

Boards Named to Study Arsenal Facilities

Washington, Dec. 3.—Further developing the plans for consideration of arsenal facilities hereafter to be required for the work of manufacture and repair which should be directly performed by the ordnance department, Maj. Gen. C. C. Williams, chief of ordnance, has appointed three committees charged with consideration of three branches of this work. These committees will report to the previously appointed board of ordnance officers, of which Brig. Gen. John T. Thompson is senior member. The committees and the subjects assigned their consideration are:

Col. John W. Joyes, Col. Charles T. Harris, Jr., and Col. James H. Burnes: All plants engaged in the manufacture of explosives and all loading plants. Col. Earle McFarland and Lieut. Col. J. S. Hatcher: The establishment of a government plant for the manufacture of machine guns, pistols and automatic rifles. Col. G. H. Stewart, Col. H. B. Hunt, and Lieut. Col. R. A. Bruce: Manufacture and development of ammunition.

General Williams has also announced the appointment of a board of officers to review the general subject of ordnance proving grounds. This board, consisting of Col. C. B. Gatewood, Lieut. Col. C. J. Browne and Lieut. Col. B. W. Simpson, will make recommendations for postwar requirements.

Form Government Bureau to Rehabilitate Russia

Washington, Dec. 3.—When announcement was made here last week of the formation of the War Trade Board of the U. S. Russian Bureau, Inc., three ships, operating under direction of the new company, were already in mid-Pacific bound for Vladivostock with agricultural implements, clothing, shoes and other commodities intended for use of the inhabitants of Russia and Siberia. The bureau is incorporated with $5,000,000 of American government funds and was organized under direction of the President. The object is to aid in the rehabilitation of the war-torn country.

Americans interested in trade with Russia are requested to communicate with the new company which has headquarters with the war trade board here. More ships for the development of Russian and Siberian trade will be provided as conditions warrant, according to Vance C. McCormick, who, as chairman of the war trade board, is president of the new bureau. John Foster Dulles is secretary and treasurer and Henry B. Van Sinderen is acting manager. The board of directors include Mr. McCormick, Thomas L. Chadbourne, Jr., Edwin F. Gay, Albert Strauss, Alonzo E. Taylor, I. Beaver White and Clarence M. Woolley, members and officers of the war trade board. License for export to Russia will be required of shippers.

Men of Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

MORTIMER ELWYN COOLEY, who was elected president of the American Society of Mechanical Engineers for the New York this week, was born at Canandaigua, N. Y., March 28, 1855. He was graduated from the United States naval academy in 1878. Soon after he was assigned for duty on a cruise in the Mediterranean sea. His promotion in the navy was rapid and at the time of the Spanish-American war he was serving as chief engineer on the U. S. S. YOSEMITE. During the years following the close of the war he undertook considerable amount of appraising work in the power plants of the Detroit street railways and in the railway, telegraph and telephone plants of the state of Michigan. He assisted in the appraisal of the mechanical equipment of the Newfoundland railways and subsequently was placed in charge of the appraisal of hydro and steam electric properties and railroads for the Michigan railroad commission. Mr. Cooley served as vice president of the American Society of Mechanical Engineers from 1901 to 1903 and from 1916 to 1917 was chairman of the executive committee, Detroit section. For a number of years he acted as chairman of the block signal and train control board, interstate commerce commission. His career as a professor began at the University of Michigan in 1881 when he took charge of the mechanical engineering department. In 1904 he became dean of the college of engineering and in 1913 dean of the college of architecture of the university.

Vincent Bendix has been transferred to the Chicago office at 327 South La Salle street, of the Eclipse Machine Co., Elmira, N. Y.

Judson T. Whitehead was recently elected president of the Machinery & Metal Sales Co., 42 Broadway, New York. He succeeds George T. Baird.

L. C. Sprague has been appointed assistant secretary of the Chicago Pneumatic Tool Co., Chicago, with headquarters at 52 Vanderbilt avenue, New York.

Seymour A. Spencer has resigned as purchasing agent of the Fisk Rubber Co., Chicopee Falls, Mass., to go with the Graton & Knight Mfg. Co., Worcester, Mass.

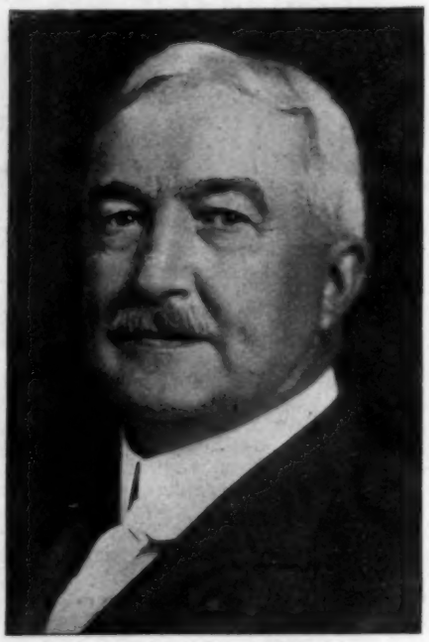
Brig. Gen. Guy E. Tripp has resigned from the army and returned to his duties as chairman of the board of the Westinghouse Electrical & Mfg. Co., East Pittsburgh, Pa.

A. G. Jones, who for many years was identified with the Windsor Machine Co., Windsor, Vt., and later with the National-Acme Mfg. Co., that city, has become general sales manager for the Cone Automatic Machine Co., Windsor.

J. D. Apgar, formerly with the Vandyck Churchill Co., in the New York territory, now is associated with the Machine Tool Engineering Co., 149 Broadway, New York city.

Martin C. Bersted has resigned from the Bersted Forming Tool Co., Chicago, leaving his two brothers Alfred and Martin Bersted to conduct the business.

W. C. St. Clair has purchased W. C. Crietzmacher's half interest in the Bower City Machine Co., Janesville,



MORTIMER E. COOLEY

Wis. He will continue the business as sole owner under the same style.

Jerome R. George, chief engineer of the Morgan Construction Co., Worcester, Mass., is contemplating a trip to Europe as soon as normal conditions are resumed.

Albert H. Inman, of Pratt & Inman, Worcester, Mass., iron and steel, has been elected president of the newly-organized Worcester chapter of the Appalachian Mountain club.

Luther B. Williams, teller at the New Britain Trust Co., New Britain, Conn., for the past 14 years, has resigned to become connected with the purchasing department of the New Britain Machine Co.

Norman P. Farrar, who for a number of years has been district manager of the Philadelphia territory for Shepard Electric Crane & Hoist Co., Montour Falls, N. Y., has been transferred to Baltimore. He is in charge of the company's recently opened branch office there.

John B. Emory, general superintendent of the Poole Engineering & Machine Co., Baltimore, resigned recently to accept a similar position with the Morgan Engineering Co., Alliance, O.

H. A. Campe of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., was elected president of the Society of Motion Picture Engineers at a meeting held at the Hotel Winton, Cleveland, recently.

Henry Cave, factory manager for the S. K. F. Ball Bearing Co., Hartford, Conn., for the past three months, has resigned and will be succeeded by R. F. Runge of the Heff-Brighton Co., Philadelphia.

W. H. Allen has been placed in charge of the Chicago sales office recently opened by the Kearney & Trecker Co., Milwaukee, manufacturer of milling machines. His address is 631 West Washington boulevard.

L. G. Buske, former directing engineer and service man with the Shaw Electric Crane Co., Muskegon, Mich., has become affiliated with the Champion Engineering Co., Kenton, O., crane builder.

L. S. Starrett, president of the L. S. Starrett Co. and president and treasurer of the Athol Machine Co., both of Athol, Mass., has been elected a vice president of the Home Market club, Boston.

William T. Johnston, president of the William T. Johnston Co., Cincinnati, which he organized a number of years ago to deal in machine tools and equipment, recently was elected a director of the Business Men's club, Cincinnati.

George S. Barton, president and treasurer of the Rice, Barton & Fales Machine & Iron Co., Worcester, Mass., has been appointed manager of the Red Cross membership campaign in that city, the week of Dec. 15.

J. C. Fitzpatrick recently resigned as manager of the construction machinery department of Gaston, Williams & Wigmore, Inc., 39 Broadway, New York. He has accepted the position of assistant to the president of the American Condenser & Engineering Corp., 120 Broadway.

Charles L. Allen, treasurer and general manager of the Norton Co., Worcester, Mass., has been named by Mayor Pehr G. Holmes, of that city, the first member of a municipal auditorium commission of seven citizens to build a $1,000,000 auditorium as a memorial to those who died in the war.

A. L. French Jr. has been appointed supervisor of personnel and industrial relations for the plant of the Pratt & Whitney Co., Hartford, Conn., having charge of employment, apprentice training and welfare work. He formerly was with the Remington Arms-Union Metallic Cartridge Co., Bridgeport, Conn., three years.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

WILLIAM M. KINNEY was recently appointed general manager of the Portland Cement association, 111 West Washington street, Chicago. He succeeds H. E. Hilts, who resigned. Mr. Kinney has been connected with the cement industry in cement and concrete promotion work for over 11 years. For the past four years he has occupied the positions of engineer, promotion bureau and inspection engineer of the Universal Portland Cement Co. He is an associate member of the American Society of Civil Engineers and American Railway Engineering association, a member of the American Society for Testing Materials, American Concrete institute, Western Society of Engineers, Engineers' club of New York, Engineers' club of Philadelphia and Chicago Engineers' club. He has been particularly active in the work of the American Society for Testing Materials, being vice chairman of committee C-1 on cement and a member of the executive committee. He is a member of the executive committee and secretary of the committee on concrete roads and pavements of the American Concrete institute. Mr. Kinney was largely instrumental in establishing the structural materials research laboratory at Lewis institute, Chicago, under the direction of Prof. D. A. Abrams, and has been since its inception, a member of the advisory committee.

B. A. Ploud has become connected with the Philadelphia sales office of the Brier Hill Steel Co., Youngstown, O.

Frank S. Chavannes, president of the Chesapeake Iron Works, Baltimore, was recently elected first vice president of the Baltimore Association of Credit Men.

L. C. Reynolds has been appointed manager of the motor factory of the General Motors Corp. in Detroit. He formerly was with the Oakland Motor Car Co., Pontiac, Mich.

Charles M. Schwab, director general of the Emergency Fleet corporation, will be the principal speaker at the annual dinner and inaugural meeting of the Boston chamber of commerce, in Symphony hall, Dec. 5.

Charles Sullivan, formerly with the Westinghouse Electric & Mfg. Co., has been made district manager at Pittsburgh for the Milwaukee Electric Crane & Mfg. Co., with office at 704 Empire building.

Verne W. Aubel, who has recently returned from blast furnace work in Australia and New Zealand, has accepted a position as assistant superintendent of blast furnaces at the Clairton, Pa., plant of the Carnegie Steel Co.

J. W. Powell, vice president of the Bethlehem Steel Corp., Philadelphia, was recently elected vice president of the National Society of Naval Architects and Marine Engineers at its twenty-fifth annual meeting in Philadelphia.

Harry Page, who is employed in the bridge construction department of the Bethlehem Steel Co., Steelton, Pa., is chairman of the general committee, representing the employes under the new representative system of meeting with

WILLIAM M. KINNEY

officials of the company, inaugurated recently. Charles E. Bates of the frog shop is secretary.

Lindsey H. Wallace, Cleveland, has resigned as southern district manager of the Emergency Fleet corporation and will return to Cleveland. The end of the war and pressure of his own business caused the move.

Robert W. Hunt, head of Robert W. Hunt & Co., Chicago, one of the iron and steel industry's pioneer and most eminent engineers, will be tendered a reception by the Mid-Day Club of Chicago, Monday afternoon, Dec. 9, in honor of his eightieth birthday.

W. C. Kennedy, formerly steam and electrical engineer with the Pittsburgh Crucible Steel Co., at Midland, Pa., has resigned to accept the position of operating engineer in charge of steam electrical and mechanical departments with the Worth Steel Co., Claymont, Del.

Harold L. Frankle, who at one time was connected with the Joseph Joseph & Bros. Co., New York, with supervision of its Norfolk, Va., scrap yard, has opened offices at 1051 Ellicott Square building, Buffalo. He will engage in a scrap iron and steel brokerage business.

R. M. Rush, who has been assistant district supply manager of the Emergency Fleet corporation for the Youngstown and Pittsburgh districts, has resigned that position and has resumed his former duties as district manager of the Kerr Turbine Co. and president of the Rush Machinery Co., Oliver building, Pittsburgh.

J. H. Porter, president of the Calumet Steel Co., Chicago, who gave up his position to aid the government to turn out its war supplies, has resigned his position as administrative officer at the Rock Island arsenal and has returned to the Calumet company. His duties will be performed by Lieut. R. C. Mitchell, formerly in charge of the civilian employment office.

John W. Fairbanks has resigned as general superintendent of the Fairbanks Steam Shovel Co., Cambridge, O., to accept a position as general sales manager of the Barker Winchless Chuck Co., Chicago. Mr. Fairbanks now is in Detroit to establish a branch office of the company. He has acquired a financial interest in the company and will soon visit the east to establish agencies.

I. H. Mills, who has been associated with the Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa., for the past 23 years, has resigned to become superintendent of the Sperry Gyroscope Co., of Brooklyn, N. Y. Mr. Mills began his career with the Westinghouse company as a machine operator, and finally became superintendent of the small industrial motor department.

W. W. Lewis, who has been affiliated with the Western Reserve Steel Co., Warren, O., ever since it was taken over by the Brier Hill Steel Co., has resigned. He recently was honored with a banquet by department heads of the corporation at the Hotel Ohio, Youngstown, O., and employes presented him with a diamond pin. Mr. Lewis will take a much needed rest before making other connections.

T. F. Baily, president of the Electric Furnace Co., Alliance, O., addressed the monthly meeting of the Philadelphia Foundrymen's association, Wednesday evening, Dec. 4, on the use of electric furnaces of the tilting hearth or pit type for melting copper, brass, bronze, aluminum and other nonferrous metals. Duke Hartogs, son of the owner of large mills at Vevires, Belgium, who spent 14 months in the field hospital service recounted his experiences at the meeting. W. W. Lindsay & Co., Inc., Philadelphia, have been proposed as new members.

Iron and Steel Financial News

Up-to-the-Minute Fact and Comment Collected and Sifted For Busy Readers

Contract Adjustments Raise Big Problem

OUR government's policy in disposing of its war contracts has been of primary importance to American iron and steel manufacturers, from a financial standpoint. This policy likewise has been of deepest industrial interest. In the first place practically all important manufacturers had been devoting all or a large portion of their plants to war work and so are individually affected by the cancellations. In the second place, this policy is important, because it will have a broad effect on general business. Manufacturers about to turn from war to peace work will effect a speedy successful transition in just such measure as they receive equitable treatment from the government on cancelled contracts.

The war department completed plans for liquidating the unfinished war contracts, last week, but these plans received a setback when the controller of the treasury, W. W. Warwick, declined to approve the form of cancellation submitted by Secretary of War Baker. The controller decided that those orders which had been placed by mail, telegram or telephone, but which were not signed by a government contracting agent and by the contractor, were not legally binding. By this ruling, orders for war materials, amounting to what is believed to be hundreds of millions of dollars, are rendered open to question. The controller also held that the war department could not agree with the contractor on an arbitrary sum to cover liabilities, unless authorization is given for this in a previously existing contract. This provision many of the war contracts lack.

Situation is Muddled

Undoubtedly a way will be found out of the legal knot introduced by Mr. Warwick, but valuable time will be lost at this time when manufacturers are anxious to return to peacetime work. Attorney General Gregory will be asked to pass upon this apparent conflict between the law, as interpreted strictly by Controller Warwick, and the desire of the war department to terminate war contracts. If legislation is found necessary, it is said, an effort will be made to rush it through congress immediately to avoid holding up the government's great demobilization and readjustment plans.

Secretary Baker had proposed a form of terminating contracts—a supplemental agreement—by which the government would be released by the contractor from the original contract and in turn would pay the contractor for "expenses incurred" in carrying out the agreement and an additional allowance for profit, limited to 10 per cent of the cost of the unfinished articles on hand. The war department had further proposed to pay the manufacturer immediately 75 per cent of the minimum due on this basis, as determined by a contracting officer of the government and the balance after time had been allowed for careful determination of the amount due. This method, Secretary Baker said, would give plants which had devoted themselves heartily to government work, some capital to finance their reconversion to peacetime production and prevent "a break in their continuous operation and employment of labor."

Controller Warwick, answering Secretary Baker's letter declared "it cannot be assumed, as the proposed contract form does, that the contractor anticipates profits from completing his contracts." He also said that the "making of a supplement agreement and the simple certifying to a minimum amount by the contracting officer upon the statement and estimate of the contractor will not be sufficient nor conclusive on the accounting officers." This referred to the checking of payments made by accountants working under his direction. He added: "The supplemental agreement cannot be permitted to impose a liability upon the government where none theretofore existed."

Elects New Officers

The Washington Steel & Ordnance Co., Washington, D. C., the largest industrial corporation in the District of Columbia, which has been engaged in the manufacture of projectiles for the United States government, recently held its annual organization election in which Lewis J. Firth was chosen chairman of the board of directors. Corcoran Thom was elected president. Other officers of the company are James W. Kinnear, vice president; Harry F. Clark, secretary-treasurer, and Walter A. Anderson, assistant secretary and assistant treasurer. The board consists of Mr. Firth, Mr. Thom, Mr. Kinnear, Mr. Clark, James E. Porter, of Pittsburgh; William Lalton, of Schenectady, and Roy C. McKenna, of Latrobe, Pa.

Petitions for Receiver

A petition has been filed in the United States district court at Philadelphia for the adjudication of the Industrial Foundry & Machine Co., Pottstown, Pa., as an involuntary bankrupt. This was necessitated by the filing of a bill in equity by George W. Corbett, Mayer Pollack and others. It is proposed to ask for the appointment of a receiver in order that the company's assets will be preserved, pending the election by the creditors of a trustee in bankruptcy. Holland M. Merrick, general manager of the American Brass Products Co., Pottstown, who is familiar with the affairs of the Industrial Foundry & Machine Co. will be suggested to the court for appointment as receiver.

Opens Display Room

The Duplex Machinery Co., Cleveland, organized eight months ago, has found it necessary to open a wareroom to take care of its expanding business. It has secured about 5000 square feet of floor space on the ground floor of the Bradley building, 1224 West Sixth street, to which the offices have been removed from 528 Leader-News building. Shortly after G. J. Hawkey resigned from the William F. Davis Machine Tool Co., which he served as Cleveland district manager, he organized the Duplex Machinery Co., to deal in new and used machine tools. He occupied a small office at 531 Leader-News building. In a few months he found it necessary to move into quarters more than twice as large and since that time has enlarged his sales force.

Mr. Hawkey has had widespread experience in the machine tool and equipment lines. Prior to his Davis Machine Tool Co. connection, he was vice president and general manager of the Cleveland Co-operative Machinery Co., and before that was manager of the machine tool department of the Cleveland Tool & Supply Co. At one time he was district manager of the Chicago territory for the American Wrapping Machine Co., Portland, Oreg. In the latter city he was employed for two years as mechanical engineer by the Zimmerman-Wells-Brown Co. For a time he was associated with the Vonnegut Machinery Co., Indianapolis, and for two years was Philadelphia branch manager for Hill, Clark & Co., machine tool dealers.

The Westinghouse Lamp Co., New York, has purchased the Franklin Electric Mfg. Co., with factories in Hartford and Middletown, Conn. It was incorporated July 1, 1900, with $200,000 capital, Jonathan Camp, its founder, having been president until his death last month.

Expect Approval of Export Combine

Federal Trade Commission Awaits Submission by Independent Steel Producers of Plan for Concerted Efforts to Gain Foreign Business—Dinkey Outlines General Scheme—Committee of Manufacturers Formulating New Organization

WASHINGTON, Dec. 3.—Confidence has been expressed here that the federal trade commission will approve of the organization by independent steel companies, both large and small, of an export selling agency. Contrary to a common impression that has prevailed, it is not a matter of these companies obtaining permission from the commission to form such an organization, but rather a question of their organizing under a charter that does not conflict with the provisions of the Webb-Pomerene act. No application for permission to form foreign selling agencies is required. The trade commission merely accepts the charters which are filed with it and then passes upon their character so as to see whether they are in accordance with the provision of the act. The charter itself is also in the nature of a notice served upon by the commission by the organizing companies and protects them from legal action under the Sherman anti-trust law, which regulates domestic combinations as distinguished from the Webb-Pomerene act which has to do only with combinations organized to conduct export trade.

Commission Investigates Firms

The trade commission, however, sends inquiries to concerns in the process of organizing foreign selling agencies, asking about their form of organization, the commodities to be dealt in capital stocks, directors, stockholders, etc. Then after the charter is filed the commission may from time to time gather data from the foreign selling agencies as to what they have done in export business, how they did it, and related facts. These facts are for use by other government departments also which may require them for their own purpose, such as the treasury department, the department of commerce, etc., and are useful to the commission as a guidance in learning about export trade conditions, although matters concerning the organizations, so far as they are private, are not to be made public.

Reports have been heard here that the steel companies organizing the foreign selling agency desire to have modified certain features of the Webb-Pomerene act, but at the offices of the trade commission it was declared it is not familiar with this situation. There is said to be a feeling that the Webb-Pomerene act does not give sufficient freedom with regard to importing raw materials, and other requirements that may be needed and that a broader provision in this direction is wanted.

It is understood that the organization committee of the proposed export steel company is meeting today in New York, at the call of President A. C. Dinkey of the Midvale Steel & Ordnance Co., to select a head for the foreign agency. Categorical denial was made last Saturday at the offices of Railroad Director General William G. McAdoo that he had been approached and asked to accept the position. Mr. McAdoo, it was declared, has not yet given serious consideration as to what he will do when he returns to private life. It is understood that J. Leonard Replogle, director of steel supply of the war industries board, had been offered the position as head of the export company, but that he declined it. Mr. Replogle, according to reports, desires to take a rest when he leaves the government service, and then to return to his private interests.

Dinkey Outlines the Plan

An interview with Mr. Dinkey regarding the organization of the export steel company was published last week in Philadelphia. According to this interview, Mr. Dinkey said, in part:

"We have our plans so worked out that we shall be able to begin business in our foreign branches on the first of the year. Naturally, as France and Belgium are the countries in the most pressing need of steel products for their reconstruction and rebuilding, it is to these countries we will devote our first efforts and attention.

"At present there are about 25 steel producing concerns that have come into the pool. All steel manufacturers in the country, however, if they feel they can manufacture more steel than is required by the demands of their home trade are eligible to join our selling organization. But be careful to understand that this does not mean that our pool will seek foreign markets to the detriment of the requirements of business and industry in the United States. Furthermore, the pool is not organized to fight the United States Steel Corp.

"It so happens at present that the Steel corporation has the only thoroughly organized steel export system. But the demands of France and Belgium, to say nothing of the rest of the world, are so great that with our home consumption there will be a ready market for all steel the United States can spare to export.

"The pool will establish selling agencies throughout the world.

"As a matter of fact, we have taken a leaf out of Germany's prewar book. All the gigantic interests which the Germans held in foreign countries—and their size was not really realized until the war brought them into the open—were controlled by pools, which received authorization from the imperial government.

"And that is just what our pool proposes to do—operate an international selling agency for steel, with the permission of the United States government."

Charles Piez, vice president and general manager of the Emergency Fleet corporation, Philadelphia, is quoted as saying that the formation of the independent steel companies into a pool will be a good thing provided the concerns can work in accord.

"It has been my observation, however," he is reported to have said, "that unless a combination is controlled by one set of men, or even by one man, sooner or later internal dissensions spring up. But beyond a doubt if properly organized such a selling pool would reduce the excessive expense of establishing foreign selling agents, which had held back American exporters in the past. It should be remembered that what has brought the so-called trusts into disrepute in this country is not the fact of concentration of control, but the overcapitalization of the combination.

"As a matter of fact, America has never sought foreign investment. Rather before the war it has been obliged to borrow foreign capital to develop United States industries.

"Compare this situation with the policy before the war of Great Britain, whose foreign investments were at the rate of about $1,000,000,000 a year, and it will be plain to see what steps must be taken by the industries of this country if they are successfully to compete with France and Great Britain for world trade.

"By training our consular and diplomatic representatives in the needs of business, the understanding of credits, and internal conditions of the countries to which they are assigned, our business interests will be able to obtain their share of the world markets.

"It will be years, however, before such training can bear fruit, and in the interim such combinations as that of the new steel pooling are necessary."

Steelmakers Name Committee

At the recent meeting of the independent steelmakers in New York to formulate plans for an export combination, representatives were present from 28 leading producers. The following committee to carry forward the organization plans was named:

John A. Topping, chairman, Republic Iron & Steel Co.; A. C. Dinkey, president, Midvale Steel & Ordnance Co.; E. A. S. Clarke, president Lackawanna Steel Co.; E. G. Grace, president, Bethlehem Steel Co.; J. A. Campbell, president, Youngstown Sheet & Tube Co., and L. E. Block, vice president, Inland Steel Co.

It is expected that the capital of the export company will be about $10,000,000, divided proportionately among the producing companies. Later it is to be expanded, since the plans call for the erection of warehouses abroad and the maintenance of a large foreign sales organization. It is thought likely that the new export company will be organized under the laws of New York state as the Independent Steel Products Corp.

Obituaries

ALFRED ERNST, widely known in the steel industry and who enjoyed a high reputation as an engineer, died at his home, 6303 Jackson street, Pittsburgh, on Nov. 27. Mr. Ernst was born in Bierne, Austria, 57 years ago, and in 1884, shortly after his graduation from the Technical institute of Vienna, he came to this country. His first important appointment was in 1894 as chief engineer of the Lackawanna Iron & Steel Co., Lebanon, Pa., now a part of the Lackawanna Steel Co., Lackawanna, N. Y. This position he retained until 1898, when he became identified with the Wellman-Seaver-Morgan Co., Cleveland, remaining with this company until 1908, when he accepted the position of general superintendent of the Algoma Steel Corp., Sault Ste. Marie, Canada. He resigned this charge a few years ago to take up the private practice of his profession as consulting engineer, making his headquarters in Pittsburgh. In this capacity he assisted in the development and building of the plant of the Aetna Explosives Co., Pittsburgh, and also in the work done by the Synthetic Hydro-Carbon Co., Pittsburgh. During the war he served as a consulting engineer on the staff of the bureau of mines, Washington. At the time of his death he was acting as engineer on special work for the Carbon Steel Co., Pittsburgh. Mr. Ernst was a member of the Western Engineering society and also of the Duquesne club, Pittsburgh.

James F. Howie, general manager of the W. D. Hofius Steel Co., died Nov. 24 at Seattle, Wash.

Frank A. McGee, president of the McGee Foundry Co., Boston, died recently at Pomfret, Conn., aged 63 years.

Jesse J. Walledom, contracting agent for the American Bridge Co., at Chicago, died of pneumonia Nov. 17, after an illness of three days.

C. T. Thompson, 31 years of age, chief clerk for the Republic Iron & Steel Co., Republic mine, died Nov. 23 of pneumonia developed from influenza. He is survived by his wife.

John Morgan Coleman, Louisville, Ky., formerly prominent in the iron and steel industry in Louisville, Cleveland and Pittsburgh, died in Stockbridge, Mass., Nov. 24, aged 85 years.

Vernon A. Hodges, aged 39, superintendent of the Union Plate & Wire Co., Attleboro, Mass., died at his home in that city, Nov. 25, of pneumonia, following influenza.

Miguel Cardona, director of the Balkan Steel Co., New York, died at his home in New York, Nov. 15. He was born in Spain 42 years ago and located in this country as a young man.

Harry E. Wertz, aged 35, manager of the Fort Pitt Coal & Coke Co., Pittsburgh, and formerly identified with the Peoples Coal & Coke Co., died at his home in Pittsburgh, Nov. 27. Mr. Wertz was born in Bryan, O., and came to Pittsburgh about 12 years ago.

Sergeant Albert C. Phelps, former traveling salesman for Landers, Frary & Clark, New Britain, Conn., recently died of disease in an American hospital in France. He enlisted in the army shortly after war was declared.

Lieut. Clair W. Welty, former night superintendent of the lower mills of the Carnegie Steel Co., Youngstown, was killed in action in France on the last day of fighting. He was a member of the 35th aero squadron. He was a nephew of Congressman B. F. Welty of Lima, O.

ALFRED ERNST

William T. Van Dorn, president of the Van Dorn Coupler Co., died, Nov. 29, at his home in Chicago from pneumonia that developed from injuries sustained in an automobile accident. He was born in Indiana and settled in Chicago in 1891, when he formed the Van Dorn Coupler Co., to manufacture devices he had patented.

Rufus H. Kellogg, secretary and treasurer of the Northwestern Engineering Works, Green Bay, Wis., organized last March to build steel and wooden tugs for the government, died Nov. 25 of pneumonia. Mr. Kellogg was 29 years of age and a native of Green Bay. He was a graduate of the college of engineering, University of Wisconsin.

Evan D. John, director of the Illinois department of mines and minerals, died, Nov. 29, at Springfield, Ill., after an illness of three weeks. He was born in South Wales in 1861 and came to the United States in 1876. After working as mine manager and superintendent for many years, he served as a member of the Illinois state mining board from 1910 to 1913.

John Albert Swindell, vice president of William Swindell & Bros., Inc., Pittsburgh, engineers and contractors, died at his home in that city on Nov. 9 of influenza and pneumonia. Mr. Swindell had a wide reputation as a metallurgical furnace engineer, and during the past three years had been engaged in constructing furnaces for munition and ordnance plants in the United States and Canada. He had been connected with the firm for about 18 years.

Capt. Benjamin C. Detchon, who prior to entering the military service was connected with the Kerr Steam Turbine Co., New York, as a mechanical engineer, died recently in France. Captain Detchon, who was 30 years old, was born and raised in Pittsburgh, and was educated in the Pittsburgh schools, Shadyside academy, Princeton university and Pennsylvania State college. He entered the military service at the outbreak of the war; served nine months as an instructor at Ft. Hamilton, N. Y., and sailed for overseas service in September.

William H. McHose, pioneer inventor and manufacturer of Dayton, died at his home in that city, Oct. 30, aged 79. He was born at Johnsville, O., April 14, 1839, and his family removed to Dayton soon after. His work in iron and steel commenced in his father's blacksmith shop where his inventive genius quickly developed. At an early age he started one of his own and from this humble start, grew the firm of McHose & Lyons, iron workers. He retired from that firm to found the National Furnace Co., to which he devoted all his time until two years ago when his health failed. He is best known as an inventor. Included in his inventions were a punch press, grinding machinery for hardened steel, a tapping machine for pipe fittings, molding machines and a cast iron dust chute which later became the pattern for government mail boxes. It was Mr. McHose who designed and constructed the first practical cupola giving 14 heats in one day. His greatest fame was gained as a temperer of steel. Steel men from all parts of the country sought his counsel on matters in which they were mutually concerned.

Plan Memorial Park

The Pittsburgh city council has formally accepted the gift of the site of the former home of the late George Westinghouse in Homewood, as a park. The tract is to be known in perpetuity as Westinghouse park. Among the other stipulations is one that the Engineers' Society of Western Pennsylvania shall have the right, with the approval of the city to erect a suitable memorial to Mr. Westinghouse within the enclosure.

Tool Trade Runs Gamut of Business

Early November Orders Bore Strictly War Character—Signing of Armistice Introduced New Phase Wherein Many Plants Reverted to Prewar Operations —Orders Now Being Placed for Reconstruction Needs

KALEIDOSCOPIC changes marked the month of November in the machine tool industry as well as in world events. History was made and tool builders as well as dealers will remember that particular 30-day period for many reasons. Chief among them was the quick transition from war to peace work necessitated by the signing of the armistice. Early in the month, practically all business placed had a direct application to war. Many hurry-up orders were placed which later were cancelled. Subsequent to Nov. 11, the majority of the orders took on a peacetime aspect, although many were placed in the last two weeks by warwork plants which required equipment to enable them quickly to complete contracts. While for several weeks, machinery men realized peace was a near future prospect, still the actual signing of the armistice by beaten Germany was sudden and they were confronted by the necessity of considering a cessation of war work and a resumption of normal commercial pursuits earlier than was thought would be necessary a short time ago. Some operating heads of warwork plants with foresight ordered tools lately of standard types and others which would require but minor changes for peace work. In numerous instances single purpose and special machines are destined to be consigned to the scrap pile at an early date. Signatures hardly were dry on the armistice when cancellations began to roll in to dealers, who in turn passed them on to the builders. At first these were in the form of requests to hold up shipments. They soon were followed by actual cancellations however and machine men were plunged into the readjustment period.

Railroads Figure in Month's Business

MORE or less railroad business was transacted during the past month. This line was little affected by the cancelling movement. The best thought in connection with future equipment developments sees an outlet for large numbers of tools in the railroad industry. Small lots were bought in November by the New York Central, Nickel Plate, Rock Island, Chicago, Milwaukee & St. Paul, Baltimore & Ohio and other roads but the Pennsylvania was the largest buyer. Inquiries for equipment for shops from Pittsburgh to Terre Haute, Ind., made appearances every day or so. Both machine tools and cranes are required in large numbers.

Shipyards Started Cancelling Movement

WHILE it is true that among the first cancellations entertained by tool plants, were those from the Emergency Fleet corporation, shipyards are relied upon to furnish a large and steady demand for equipment. because the Bethlehem Shipbuilding Corp. was unable to get an additional appropriation from the government to equip the Alameda shipyard in California, all orders for equipment were cancelled. Some of these cancellations were replaced by orders to send completed equipment to other yards of the Emergency Fleet corporation. The Chinese yard under contract to the Fleet corporation obtained many tools and several cranes in the eastern market. Another yard to be affected by the Fleet corporation's cancellation was that of the New York Shipbuilding Co., at Camden, N. J. It was reported that the expansion in a modified form would be carried on by the company itself and a revised list of tools would be issued.

Aircraft Plants Watched With Interest

EXPLOITATION of aircraft as a peacetime means of transportation continues. Their great initial cost is a handicap. Many cancellations were filed for tools which were to operate on parts for bombing and fighting planes, but aircraft factories continue to turn out large numbers. The Glen L. Martin Co., Cleveland, is completing its government contract for planes and employes of the Long Island City and Brunswick, N. J., plants of the Wright-Martin Airplane Corp. were told that sufficient orders were on hand to keep them all at work. The government is to utilize the planes in the postal service and in other departments.

Shellmaking Tools Hard Hit

DOUBTLESS the class of work mostly affected by the cancellations which followed in the wake of the cessation of hostilities was for munition plants. Early in the month inquiries were heavy from plants making shells, shell adapters, boosters, time fuses, etc. Among them was one for 25 screw machines from the American Brake Shoe & Foundry Co., Erie. One Ohio concern sent an inquiry to the Chicago market for 50 thread millers. Many such orders were placed early in the month. The International Harvester Co. placed orders for Akron and Chicago. It was asking for 30 turret lathes. The International Arms & Fuse Co., Bloomfield, N. J., also ordered. The American Multigraph Co., Cleveland, made some purchases against its list of 300 tools issued in October. Among the small arms plants to take equipment early in the month was the Winchester Repeating Arms Co., New Haven, Conn. When the capitulation of Germany seemed but a matter of hours, cancellations commenced to pile in on dealers and makers by letter and telegraph. Some were accepted. Others could not be taken because of their special character, metric measurements, etc., and advantage was taken of the government's offer to reimburse on all such expenditures. One large cancellation was sent in by the American Brake Shoe & Foundry Co., Erie. All equipment ordered for the Beech Bottom, W. Va., forging plant of the Whitaker-Glessner Co., Wheeling, W. Va., was cancelled. Many automobile companies which for many weeks had devoted all their energies to shell production and had ordered more machines to increase their facilities, found it necessary to place cancellations.

Gun Plants Curtail Production

CURTAILMENT of gun production which hit its stride in recent months, was brought about by the downfall of the central powers. Many projects were held up. The 12-inch howitzer plant for the Midvale Steel & Ordnance Co. probably will not now be built and equipment ordered for it now in course of construction will find other berths. A blanket order suspending operations on all equipment for the Neville island ordnance plant of the Steel corporation was sent out and this later was followed by a request for an affidavit tabulating all expenditures, etc., which seemed to presage a settlement from the government. One rumor has it that the Steel corporation will complete the plant on a smaller scale for its own purposes. Tool and crane orders placed early in the month by the different arsenals, Rock Island, Watervliet, etc., were followed later by cancellations. The Charleston armor plant of the government took $1,000,000 worth of equipment in November.

Export Markets Revive in November

EXPORT trade commenced to open up in November. Inquiries are coming in from South America, France, Belgium, Great Britain, Italy, Japan, etc. The Braden Copper Co., New York City, is taking the machinery it ordered some time ago for South America, and will store it against future needs of that country. Some dealers who hitherto have not engaged in export business are planning to open up such departments, since large needs abroad present many opportunities for the disposal of large lots of equipment.

Tractors a Peacetime Necessity

LITTLE has been heard from tractor plants but the feeling is that the lull precedes a storm of orders. Plants which have been building artillery tractors will find an outlet for their product with changed lines in the demand from agricultural centers. Henry Ford is to build another tractor plant at Adrian, Mich., and his Hamilton, O., project is to be revived.

Peace Time Machine Inquiry Starts

A Few Orders and Inquiries of a Character Other Than War Work Are Received—Cancellations on Down Grade—Government Thought Fully Responsible for Expense Incurred to Date on Suspension Orders

RECONSTRUCTION needs are commencing to engage the attention of machine tool builders and dealers. Many of the problems which came to light with the signing of the armistice are to be discussed and probably solved at the meeting of the National Tool Builders' association in New York next week. In the absence of any stated government program for the reconstruction period, particularly in connection with subcontracts, much conjecture is being indulged in and a certain measure of uncertainty prevails. This, however, is being tempered in many directions by the prospect of settlements of some sort from the government to cover investments in machines on which construction had started when orders to suspend operations were received. The Ford Motor Co., which cancelled many tools for Liberty engine work, has asked for a tabulation of the present state of the machines, advising that a government appraiser will call and make an adjustment.

Cancellations are receding. In Pittsburgh a few continue to be made by munition plants which received orders to suspend operations, while in Chicago the situation has been relieved somewhat by the reinstatement of several orders where construction was far advanced. The tools now are to be accepted and stored to be used later in government arsenals. In New York tool builders are obeying the government's order to stop work and file claims. Some cancellations have been refused on the ground that plant organization would be disrupted. Several Cleveland dealers who received large cancellations are busy straightening up order books. One order for a tool to operate on war work was cancelled and another tool for peace needs of the particular plant in question was ordered in its place. Its value was twice as great as the value of the first. This is one instance among several cited to show how the proverbial ill wind blows at times. Several inquiries are coming out from plants which could not secure the necessary priority in war time. Some were received in New York from concerns in the brass industry. General trading is slow, however, in all districts, and it is thought users are awaiting a downward revision in prices. One thing that is helping the market for new machines is the absence to date of large offerings of used tools.

Attention is being paid to the possibilities in export trade. Ohio dealers are receiving some orders from South America, France and elsewhere. Pittsburgh dealers plan to enter foreign markets. Uncertainty is felt in New York over the possible attitude in connection with the settlements of foreign governments on cancelled war contracts.

Outside of large inquiries which the Pennsylvania continues to send to all markets, the principal railroad list to come out recently is that of the Lehigh Valley for 19 machine tools which it is thought will go to Sayre, Pa.

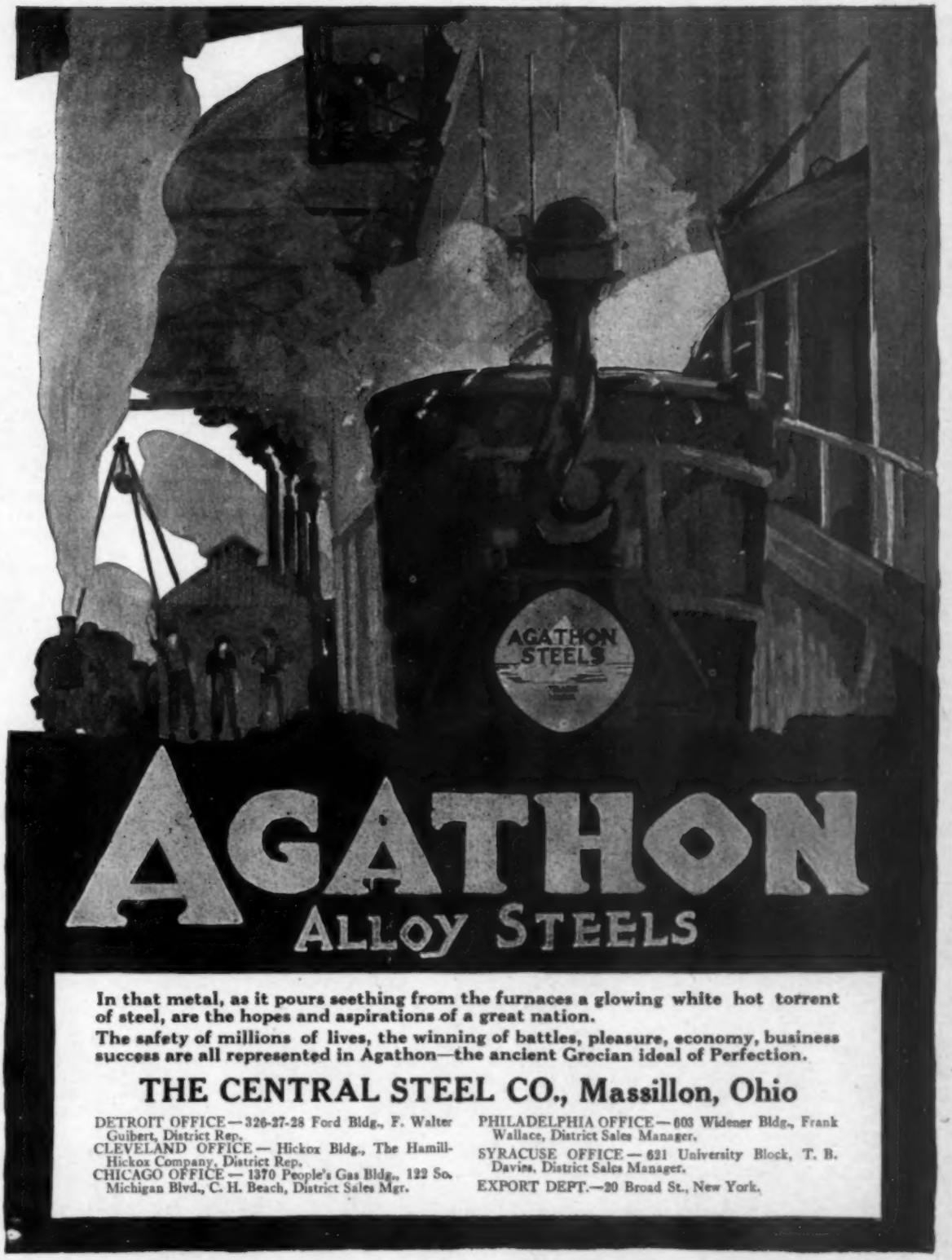
Locomotive crane cancellations to the amount of 25 per cent of original allotment were received in the East last week from the government. Builders, however, have enough orders on hand to keep running two months at least, but new demand is absent. Electric cranes are asked for by the railroads. The Pennsylvania wants 10-ton and 25-ton overheads. The New York Central bought four 10-ton travelers. The Texas Shipbuilding Co. bought a 5-ton traveler.

Government Starts to Cancel Locomotive Cranes

THE large volume of cancellations, which followed action of the ordnance department last week in stopping work on certain munition contracts less than 50 per cent completed, is falling off in the eastern tool market. At the present time cancellations are few and scattered. These cancellation orders for the most part are in the nature of a request to stop work and submit claims, and in most cases machine tool builders are complying specifically. Some builders, however, refuse to accept any cancellations whatsoever on orders already begun, and are carrying the work through to completion. They state that to stop work on various tools as requested would disrupt their organizations. It is further stated that if they were to go ahead at present high operating costs, having accepted such cancellations, they would be in a fair way to incur heavy financial losses later in disposing of the tools. It is questioned, in some quarters, in view of various decisions rendered in cancellation cases of the past, whether such a policy is altogether sound.

As the government has not as yet announced a definite policy with regard to cancellations, there continues much conjecture in the trade as to what action will be taken. Where companies engaged in war work have direct contracts with the government, there appears but little doubt that the government will stand fully responsible. But in the matter of subcontracts the attitude of the government is not so clearly defined, and furthermore, there is some question as to what action will be taken in the settlement of foreign government orders. During the past two weeks, machine tool manufacturers have been making various trips to Washington, and have been holding local conferences in different manufacturing centers throughout the country in an effort to get some light on the present situation and to discuss conditions generally. It is believed that many problems now confronting machine tool builders will be ironed out at their annual convention in New York City early this month. From present indications, the matter of war contracts will be handled by local adjustment boards in the various industrial sections, these boards being under the jurisdiction of Washington.

Trading in the eastern market, as a whole, continues slow, buyers apparently awaiting a revision of prices. This tendency now is being noted more generally in the case of the railroads, whose buying has fallen off somewhat during the last few weeks. The railroads however, continue to send out a fair volume of inquiries. Perhaps the latest inquiry in the market is one involving a list of 19 machine tools for the Lehigh Valley railroad. It is believed that the equipment is for its plant at Sayre, Pa. The Pennsylvania Lines West has possibly been the largest buyer of the past week. Several sizable inquiries also have been coming out recently from the brass industry, and in some quarters considerable demand is expected to develop in this source as time goes on. A number of the plants will continue to be heavily engaged in work for the navy, and in the majority of cases the



AGATHON
ALLOY STEELS

In that metal, as it pours seething from the furnaces a glowing white hot torrent of steel, are the hopes and aspirations of a great nation.

The safety of millions of lives, the winning of battles, pleasure, economy, business success are all represented in Agathon—the ancient Grecian ideal of Perfection.

THE CENTRAL STEEL CO., Massillon, Ohio

DETROIT OFFICE—326-27-28 Ford Bldg., F. Walter Guibert, District Rep.
CLEVELAND OFFICE—Hickox Bldg., The Hamill-Hickox Company, District Rep.
CHICAGO OFFICE—1370 People's Gas Bldg., 122 So. Michigan Blvd., C. H. Beach, District Sales Mgr.
PHILADELPHIA OFFICE—603 Widener Bldg., Frank Wallace, District Sales Manager.
SYRACUSE OFFICE—621 University Block, T. B. Davies, District Sales Manager.
EXPORT DEPT.—20 Broad St., New York.

mills are well booked ahead on commercial work. The revival of commercial building in this country is expected to be a big factor in the continued prosperity of the brass industry.

A recent development in the crane market has been the cancellation of locomotive cranes by the government. These cancellations in some instances have run about 25 per cent of the original allotment. Such action, it is said, has been due to the curtailment of shipments to France, and the suspension of the wooden shipbuilding program. Despite these cancellations, however, it is believed that locomotive crane builders generally have enough government work on their books to keep their plants in operation for at least two months. New demand for locomotive cranes at present virtually is at a standstill. In the electric crane industry, attention continues to be centered chiefly on the requirements of the railroads. During the past few days, the Pennsylvania railroad has issued additional inquiries involving one 10-ton and two 5-ton overhead cranes. The Pennsylvania railroad has recently purchased two 3-ton grab bucket cranes for Washington from the Milwaukee Electric Crane & Mfg. Co. The New York Central railroad has bought four 10-ton traveling cranes from the Shepard Electric Crane & Hoist Co. The Texas Shipbuilding Co., Bath, Me., has also recently placed an order with the Shepard company for a 5-ton traveling crane.

Situation Relieved in Chicago

MACHINE tool dealers in Chicago find the situation following cessation of war activities resolving itself more rapidly than had been expected. This has been accomplished in a way to do the least harm to the industry. Inquiry generally is good, many users of equipment coming into the market now who had been kept out by lack of priority for some time past. This business is largely for single tools, but is filling in well while larger requirements are being outlined. A large measure of relief is being met in the recall of some cancellations of machinery ordered on government account. This now is to be completed where much progress had been made. This change of attitude has helped conditions materially and is being applied where it will not result in waste of effort and material. It is believed machinery warehouses will be established where excess equipment will be stored, to be drawn on as need arises in future, for arsenals and other shops of the government. Some of the gun plants which have begun actual deliveries will keep on turning out guns which will be taken by the ordnance department for army use, allowing the plants to change gradually to other lines. This will require some equipment already under construction but not yet delivered. Agricultural implement manufacturers are buying and tractor builders are becoming unusually active, some excellent business coming from that industry. Much business is in sight now which has not actually materialized. The Pennsylvania railroad has issued a number of inquiries for shop tools, none of which has yet been closed. Sale of the machine tool equipment of the Smith Form-A-Truck Co., recently was at high prices and practically everything went to users, dealers not being able to meet prices users were willing to pay. This indicates a strong market. Manufacturers have not shown ability to hasten deliveries as a result of cancellations and the situation in that respect is little changed as a rule. The H. G. Saal Co., Chicago, will build a 2-story factory. The Beare Valve Co., Chicago, is also building a 2-story plant. The Wisconsin Steel Co., Chicago, is putting up additions to its by-product plant. Port Huron, Mich., is taking bids for two motor driven centrifugal pumps for its waterworks plant. The Central Forge Co., Detroit, is building a forge shop extension. The Dixie Machinery Mfg. Co., St. Louis, will build a feed mill factory. The Inland Machine Co., St. Louis, will build a plant. The Standard Foundry Co. and the Simms Foundry Co., of Racine, each will build a foundry addition.

Pittsburgh Dealers Await Settlements

CANCELLATIONS of orders for machinery and tools continue to be made in the Pittsburgh district by plants which had received suspension of orders on government contracts for munitions. Thus far little new business has developed to take the place of the revoked orders. At the same time, few of these plants are letting go of their used machinery and while the market admittedly is quiet, it is helped to some extent by the lack of large offerings of second hand equipment. The matter of settlements on cancelled direct or indirect government requirements is awaited with considerable interest. The common sense view of such adjustments is that the manufacturers who turned their plants over to the government or were engaged 100 per cent on government work should be assisted in getting back to a normal basis. Those who accepted government assistance in doubling or trebling their plants, should not expect too much help. It is considered fortunate that on a fairly large percentage of orders, work had not begun when the signing of the armistice brought cancellations. The Pennsylvania railroad has put out more lists of shop requirements for shops west of Pittsburgh but has not placed any orders lately. The export field is being watched closely for possibilities.

Cleveland Market is Quiet

TRADING in the Cleveland machine tool market during the past week has been light. Inquiries are received from time to time on small numbers of machines and a few orders are booked. Their character indicates that industry is reverting to normal peacetime pursuits. Spectacular buying or issuance of lists is entirely absent however, and no great activity is anticipated until after the first of the year. The present lull resembles the customary slack period of July and August more than it does the usual preholiday period of dullness.

Those dealers who carry samples of machines they handle on their warehouse floors have been flooded with shipments. Builders have received so many cancellations they have been able to give attention to stock orders of long standing. The movement to cancel has subsided greatly and readjustments are the order of the day. The Ford Motor Co., Detroit, has requested dealers through whom it ordered tools for Liberty motor work to tabulate all machines on order, the progress made in their building

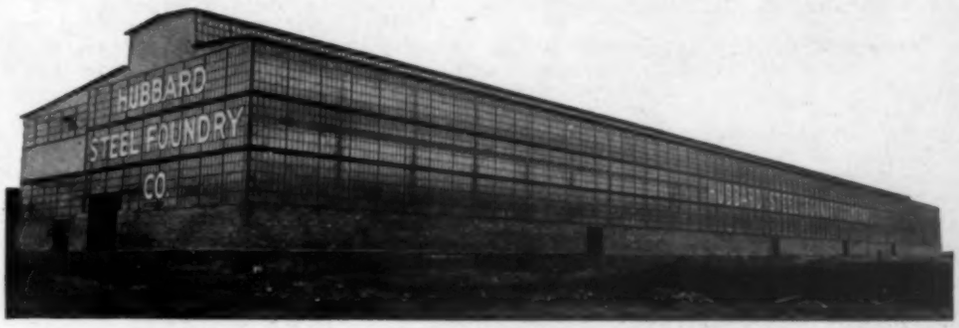
Automobile Business to Take Many Tools

THAT automobile manufacture is destined to open up in the near future in a way that will necessitate the purchase of many machine tools would seem to be borne out by remarks of John N. Willys, head of the Willys-Overland Co., Toledo, O., and the Curtiss Aeroplane & Motor Corp., Buffalo. In a recent interview, Mr. Willys portrayed a glowing future for the automobile, airplane and tractor industries and predicted that within 12 months American hydroairplanes will be crossing the Atlantic with passengers, freight and mail. Discussing the outlook, Mr. Willys said:

"Automobile manufacturers have a good year ahead of them in 1919. Nearly all automobile plants will be back to full production by next summer and can be manufacturing automobiles on a 100 per cent basis by spring if materials are obtainable. We expect the Willys-Overland factories at Toledo, Elmira and Pontiac will be back to full 100 per cent production by early spring. Our plants are to work out of munition contracts as rapidly as possible and increase the output of automobiles as fast as materials can be secured. Although a little time will be necessary in making the transition from a war to a peace basis, less disruption will be caused than when the transition was made from a peace to a war basis.

"The purchase by Willys-Overland of a controlling interest in the Moline Plow company was especially opportune. There is a tremendous demand for farm tractors, both in the United States and in Europe, and the Moline plant is already 9000 tractors behind orders. The equipment for making engines is being installed in the Toledo plant as fast as we can obtain it. We expect that the tractor engine department will be a regular part of the Toledo factory."

SPEEDING with ROLLING MILL JIM



Say Fellows! you remember the first of March I told you the "Hubbard" broke ground for a new foundry? Well here's a picture of her, she started with a BANG, June 3rd. Just 93 days! She has ***some*** up-to-date equipment in her, installed by ***some speed artists,*** I'll say: electric furnace, open hearth furnace and all that swell stuff. Pike her off for yourself!

So long,

Rolling Mill Jim.

Hubbard Steel Foundry Co.

EAST CHICAGO, IND.

All Kinds of Iron and Steel Rolls and Steel Castings.

to date, the number of finished parts and various other items. The statement is made that after this is filed, a government appraiser will call to make a settlement. While this involves a vast amount of detail work, and some complications are expected, it is thought that the policy of reparation on the part of the government will serve as a stabilizer and that eventually the proposition will work itself out to the benefit of all concerned. Through the local district ordnance office, information is circulated to the effect that the war department has authorized immediate payment of war contractors who have claims against the government arising from suspension of operation under, or curtailment or cancellation of ordnance contracts. Many plants are still at work in the Cleveland district on government work. It is stated that the Stearns Co., Cleveland, manufacturing Rolls-Royce airplane engines continues to operate. The C. & G. Cooper Co., Mt. Vernon, O., manufacturer of marine engines for the Emergency Fleet corporation, has not curtailed its output.

Railroad buying is negligible. The appointment of a successor to Director General of Railroads McAdoo is awaited with interest, since it is expected that all lines under government control are in need of equipment and one of his first duties will be to make purchases. The New York Central, Nickel Plate and Pennsylvania roads all place small orders from time to time, the latter has asked for a 6-foot radial drill for Ashtabula. It is expected that early in 1919 dealers will be hard put to it to supply the railroad demands for machinery. The Detroit, Toledo & Ironton railroad is to put up some shops at Napoleon, O., and the Delaware, Lackawanna & Western railroad will expend about $100,000 for a repair shop at Buffalo.

Conflicting reports are in circulation regarding automobile manufacturers. One states that many automobile plants are having difficulties with the labor supply and in obtaining sufficient quantities of raw materials, forgings, etc., and on that account resumption of peacetime operations cannot be expected for six months. Another report has it that they are not having labor or material troubles, that they have a vast number of orders on hand and plan to go ahead shortly on the production of quantities of cars on a scale greater than ever and that tool needs will be large. Automobile accessory plants continue to buy a small amount of machinery. The Loomis-Beardsley Mfg. Co., Columbus, O., has made inquiry in Cleveland for lathes, drill presses, etc. The W. H. Mullins Co., Salem, O., has bought a small lathe. Another northern Ohio user has asked the W. M. Pattison Supply Co. to hurry shipment of one each 17-inch x 4-foot and 21-inch x 6-foot planers. A little export business is being done. The Strong, Carlisle & Hammond Co. is shipping three wall type radial drills to France. Tentative inquiry of a miscellaneous character keeps up at a fair rate. The Century Machine Co., Cincinnati, expects to fill its equipment needs in that city for a plant to cost $75,000; the Chisholm & Moore Mfg. Co., Cleveland, is putting up an addition as is the Cornwall Mfg. Co., 12716 Penobscot avenue, that city. The Meyer Rubber Co., Cleveland, has purchased the plant of the Columbiana Mfg. Co., Columbiana, O., and will convert it into a factory for making pneumatic tires. The Aluminum Castings Co., Cleveland, has made some purchases recently from Cleveland dealers. The crane market continues quiet. The Henry Vogt Machine Co., Louisville, Ky., will require two or three traveling cranes for its shops to handle boilers, heavy machinery, metals, etc.

New Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Factories

BANGOR, ME.—The A. B. Haskell Co. will build a brick, 3-story, 35 x 95-foot factory and an 18 x 25-foot boiler house.

CARIBOU, ME.—Bids close Jan. 6, for a brick, stone and wood, 2-story and basement, 54 x 70-foot post office building to cost $50,000.

PORTSMOUTH, N. H.—Bids close Dec. 9, for a brick, steel, concrete and hollow tile addition to the machine shop at the navy yard, to cost $135,000.

PORTSMOUTH, N. H.—C. W. Parks, chief of bureau of yards and docks, Washington, is receiving bids on the construction of a $135,000 machine shop addition.

BOSTON—The Trimont Mfg. Co. has let the contract for a brick addition and alterations to its 1-story forge shop at 55 Amory street, Roxbury district.

CAMBRIDGE, MASS.—The molding mill of the Brett, Rayner, Boyer Co. was damaged by fire Nov. 24. Loss was estimated at $100,000.

EAST BOSTON, MASS.—The brick, 1-story building of the Gibby Foundry Co., 94-100 Condor street, was damaged by fire, Nov. 21.

NEWBURYPORT, MASS.—Bids close Jan. 3, for a 1-story and basement, 85 x 94-foot post office building to cost $70,000.

NORTH TRURO, MASS.—The East Harbor Fertiliser Co. will build a 2-story, 70 x 70-foot factory, a 1-story boiler house and a 30 x 70-foot storehouse.

WINCHESTER, MASS.—Bids close Jan. 16, for a brick, stone and fireproof, 1 and 2-story, and basement, 88 x 123-foot post office building to cost $75,000.

WORCESTER, MASS.—The Crompton & Knowles loom works has let the contract for a brick, 1-story, 80 x 100-foot storage building.

PAWTUCKET, R. I.—Bids have closed for a brick, fireproof, 2-story, 60 x 160-foot addition to the plant of the L. B. Darling Fertilizer Co., to cost $35,000.

LEESVILLE, CONN.—The Central Connecticut Power Co. plans to start work shortly on a $26,000 addition to its power house here. Jenks & Ballow, Providence, R. I., are engineers.

NEW LONDON, CONN.—Heawelton & Chambers, New York City, have received the general contract for erecting a foundry and machine shop here for the navy department.

SALISBURY, CONN.—The Central New England railroad has awarded the general contract to the H. Wales Linds Co., Meriden, Conn., for the construction of an engine house and repair shop, here.

STAMFORD, CONN.—The Waterside Mills will erect an addition, 1-story, 40 x 50 feet.

Along The Atlantic Coast

ALBANY, N. Y.—Plans are said to be under way for the erection of a plant here for the Adirondack Steel Corp.

BUFFALO—The Buffalo Pressed Steel Co. plans to erect an addition, 30 x 35 feet.

BUFFALO—The J. P. Devine Co. has completed plans for a $9000 machine shop extension, 2-stories, 30 x 100 feet.

BUFFALO—Plans have been completed for the erection of a foundry extension at the plant of the Atlas Steel Castings Co. The proposed building will be 1-story, 50 x 112 feet.

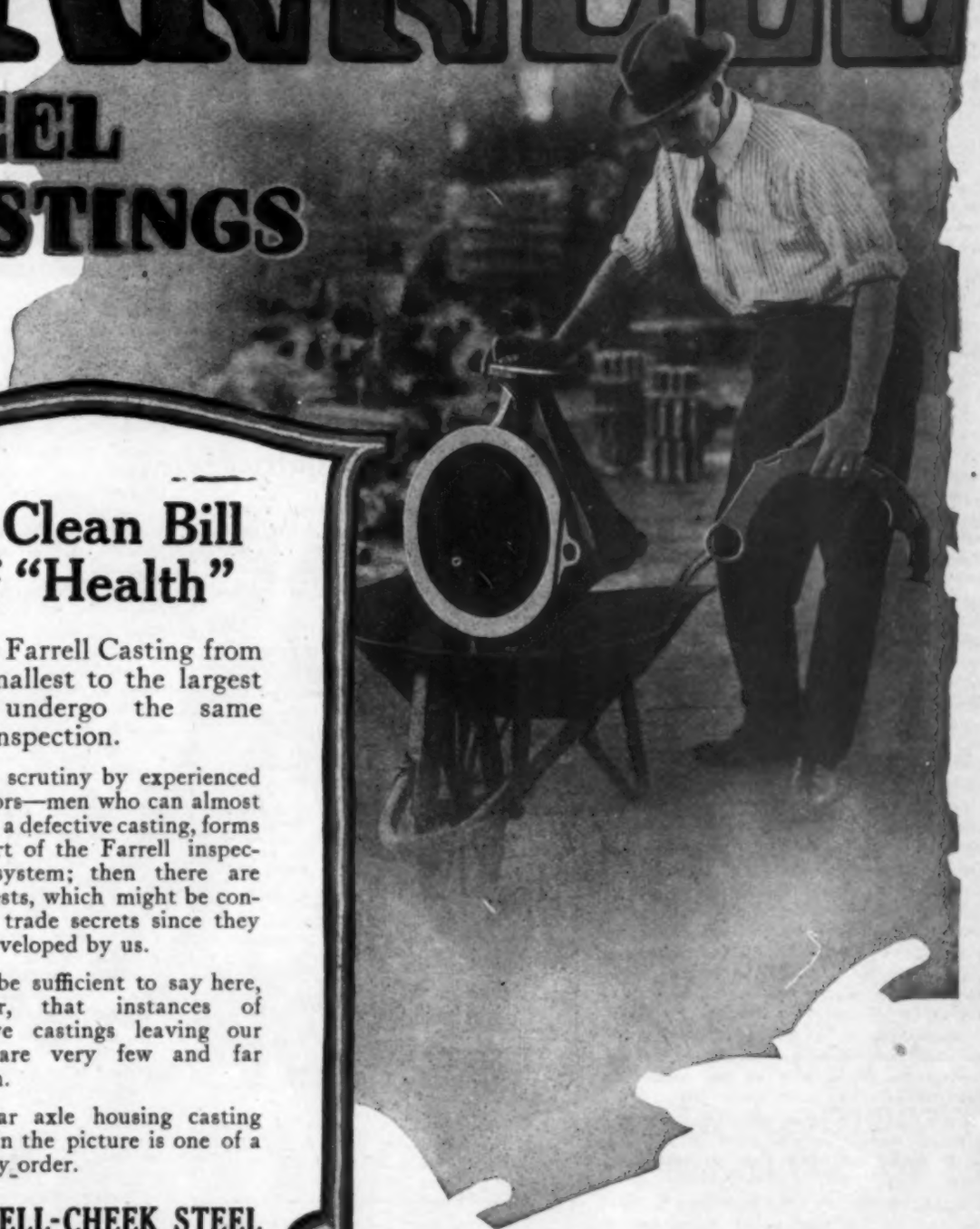
BUFFALO—The Delaware, Lackawanna & Western railroad, Hoboken, N. J., will erect a $100,000 car shed and repair shop here.

BUFFALO—The Donner Steel Co., 474 Abbott road, has a permit to erect a 2-story producer house extension.

BUFFALO—The Howard Steel Corp. has been incorporated to manufacture iron and steel and de-

FARRELL

STEEL CASTINGS



A Clean Bill of "Health"

Every Farrell Casting from the smallest to the largest must undergo the same rigid inspection.

Careful scrutiny by experienced inspectors—men who can almost "sense" a defective casting, forms one part of the Farrell inspectional system; then there are other tests, which might be considered trade secrets since they were developed by us.

It will be sufficient to say here, however, that instances of defective castings leaving our plant are very few and far between.

The rear axle housing casting shown in the picture is one of a quantity order.

FARRELL-CHEEK STEEL FOUNDRY CO.
SANDUSKY, OHIO

velop coal and oil lands, with $400,000 capital. P. G. Buxby, E. W. Seeger and N. C. McGuire, of Buffalo, are the incorporators.

BUFFALO—Work will be started shortly by the Metal & Alloy Specialty Co. on three factory buildings. One structure will be one story, 60 x 100 feet, another two stories, 35 x 35 feet and the third one story, 40 x 40 feet.

LACKAWANNA, N. Y.—Two frame warehouses and a brick office building, owned by Joseph & Brothers, scrap dealers, 700 Ingham avenue, recently were badly damaged by fire.

LONG ISLAND CITY, N. Y.—Bids will be received on a $725,000 factory building for S. Carpent & Bros., Bush Terminal building, Brooklyn. Ballinger & Perrod, 1328 Broadway, New York City, are engineers in charge.

MARINERS HARBOR, S. I., N. Y.—The Staten Island Shipbuilding Co. has completed plans for a $40,000 machine shop, two stories, 50 x 150 feet. The Fred T. Ley Co., 19 West Forty-fourth street, New York City, has the contract.

NEW YORK CITY—A $5000 blacksmith and harding shop is being contemplated by the Trinity Church Corp., 187 Fulton street.

NEW YORK CITY—The H. Wales Lines Co., Meriden, Conn., has been awarded a contract by the New York, New Haven & Hartford railroad to build a 1-story, 50 x 70-foot mill and blacksmith shop.

NEW YORK CITY—The Penn Valley Steel Co. recently was incorporated with $10,000 capital by F. Spiro, N. Goodman and H. Solomon, 135 Broadway. The company will manufacture steel specialties.

NEW YORK CITY—The Wadal Corp., Manhattan, has been incorporated with $100,000 capital to manufacture oil and gas burner devices. H. C. Wade, G. H. Porter and F. J. Linke, 136 Liberty street, were the incorporators.

NEW YORK CITY—A $100,000 machine shop will be erected by the Standard Concrete Steel Co., 105 West Fortieth street. Plans now being drawn by Architect Wm. H. Farrar, 105 West Fortieth street, call for a structure one story, 110 x 225 feet.

NIAGARA FALLS, N. Y.—The Republic Carbon Co., 912 Ellicott Square building, has let a contract to the Lackawanna Bridge Co. to construct a plant.

OGDENSBURG, N. Y.—The New York Central railroad will build a $30,000 mechanical coal-handling plant here. Chief Engineer G. W. Kittredge, Grand Central terminal, New York City, is in charge.

OSWEGO, N. Y.—The Oswego Tool Co. contemplates the erection of a plant addition. J. H. Seeber, architect, is drawing preliminary plans.

ROCHESTER, N. Y.—F. L. Heuges Co. will expend $50,000 on the construction of three factory additions. The buildings will be one story, 70 x 120, 50 x 180, and 20 x 160 feet.

TONAWANDA, N. Y.—The McKinnon Chain Co. has started work on erecting four additions. A contract for the heating plant has been awarded the Power Efficiency Corp., 102 Clinton street.

UTICA, N. Y.—The Utica Duxbak Corp. will build a $20,000 mill addition, three stories, 25 x 70 feet. G. E. Jackson and Walter Frank are architects in charge.

BELLE VERNON, PA.—The Philadelphia & Cleveland Coal Co. will build a coal loading dock on the bank of the Monongahela river, opposite here.

FREEPORT, PA.—This borough will build an addition to its waterworks plant. Address the borough engineer.

GREENSBURG, PA.—The commissioners of Westmoreland county are considering building a power plant at the poor farm.

LOCK HAVEN, PA.—The Andrews Tanning & Extracting Co. will build a plant at Andrews, Cherokee county, N. C.

HAUTO, PA.—The Lehigh Navigation Electric Co. contemplates the erection here of a $15,000,000 power plant. The Phoenix Construction Co., 71 Broadway, New York City, is engineer in charge and has just completed preliminary drawings. J. B. Crane, Allentown, Pa., is representing the Lehigh Navigation Electric Co.

LYKENS, PA.—The American Briquetting Co. will receive bids within 90 days on a $50,000 plant addition. The proposed structure will be one story, 40 x 100 feet. Kern & Dodge, Philadelphia, are architects in charge.

MARIETTA, PA.—Work has been started on the erection of car shops for the Pennsylvania railroad.

MEADVILLE, PA.—The Erie railroad has let the contract for a 1-story shop, 50 x 75 feet.

McKEESPORT, PA.—The county commissioners have decided to go ahead with the construction of a bridge across the Monongahela river.

MONESSEN, PA.—The Carnegie Steel Co. has started work on the construction of a marine way plant on the river front.

NATRONA, PA.—The plant of the Penn Salt Co. recently was badly damaged by fire. The loss will run into the thousands, it has been estimated.

NORTH EAST, PA.—The Electrical Materials Co. has let the contract for a $35,000 plant to be 40 x 60 feet.

OAKMONT, PA.—The Edgewater Steel Co. has let the contract for the erection of a plant 100 x 125 feet here, to cost $60,000.

Central States Activities

ALTOONA, WIS.—The village board has awarded the general contract for the construction of a municipal waterworks system and pumping station to Andrew Larson & Co., 414 Main street, Eau Claire, Wis. The project will require about 5000 lineal feet of 4, 6 and 8-inch cast iron pipe and 18 hydrants; a 120-gal. per minute pump and a 15-horsepower electric motor.

Government Inquiries

BIDS on the following equipment are desired by the navy department, bureau of supplies and accounts:

Four boring, drilling and milling machines, 7181½, Norfolk.
Two double driven grinders, 7199½, Puget Sound.
Six turret lathes, 7202½, Washington.
Four milling machines, 7242½, Washington.
One engine lathe, 7243½, Alexandria, Va.
One splitting shears and combined lever, punch and shear; also for bending rolls, 7244½, Sewall's Point, Va.
Four drilling machines, 7245½, Alexandria, Va.
Ten drilling machines, 7246½, Alexandria, Va.
Four drilling and lapping presses, 7247½, Alexandria, Va.
Two drilling machines, 7248½, Alexandria, Va.
Four milling machines, 7249½, Newport, R. I.
One double surfacer, one vertical shaper, one jointer, 7263½, Pensacola, Fla., Dec. 13.
Two drill grinders, 7272½, Puget Sound, Dec. 16.
Seventeen engine lathes, 7276½, Charleston, S. C.
Two turret lathes, 7278½, Charleston, S. C.
One centering machine, 7279½, Washington.
Two shapers, 7292½, Washington.
Twelve engine lathes, 7293½, Alexandria, Va.
One turning machine, 7295½, Brooklyn, Dec. 16.
One metal planer, 7319½, North Charleston, S. C.
One each, 16-inch and 24-inch crank shapers, 7321½, Charleston, S. C.
One precision lathe, 7322½, Boston.
One single spindle shaper, 7336½, Portsmouth.

Schedule numbers, dates of opening and places of delivery follow the specifications of the tools.

BELOIT, WIS.—The common council has instructed the city engineer to prepare plans and estimates for a new bridge over the Rock river at Central avenue. Bids will probably be asked on three types, namely, steel, reinforced concrete, and steel and concrete. The plans are expected to be ready about Jan. 1.

GREEN BAY, WIS.—The Northern Corrugating Co. has been organized by Frank Flagge, to establish a corrugated sheet metal works. The company has a capital stock of $200,000.

MADISON, WIS.—Articles of incorporation have been filed by the Universal Products Co. to manufacture and deal in machinery, tractors, etc. The capital stock is $50,000 and the promoters are John L. Newman, E. L. Lee and John L. Bourke.

MADISON, WIS.—Articles of incorporation have been filed by the Big Creek Iron Mining Co., with headquarters at Mauston, Wis. The capital stock is $100,000 and the incorporators are E. A. Grover, John E. Hallada and Frank H. Hanson.

MILWAUKEE—The plant of the Trico Fuse Mfg. Co., 1017 Cold Spring avenue, was damaged by fire recently.

MILWAUKEE—The Gerlinger Steel Casting Co. recently increased its capitalization from $15,000 to $75,000.

MILWAUKEE—The Stamp Loading Machine Co. has been incorporated with a capital of $75,000 to manufacture machinery, conveying apparatus, remodel and reconstruct machine tools and other equipment. The incorporators are H. O. Stamp, Irwin G. Toepfer and Charles J. Pokorney.

OSHKOSH, WIS.—The Universal Motor Co., manufacturing direct-connected generating units for machine shops, garages, military purposes, farms, etc., has increased its capital stock from $50,000 to $100,000.

RACINE, WIS.—The Standard Foundry Co. will build a 1-story foundry, 80 x 200 feet. E. B. Funston & Co., Robinson building, are architects.

RACINE, WIS.—The Simms Foundry Co. will build a foundry addition 60 x 100 feet. E. B. Funston & Co., Robinson building, are architects.

DETROIT—The Wilson Body Co. will build a 2-story factory, 98 x 303 feet.

DETROIT—The Detroit Nut Co. will build an addition, 56 x 68 feet.

DETROIT—The Central Forge Co. is building a forge shop extension and a heat treating building.

DETROIT—The Skinner Dry Gas Carburetor Co., capitalized at $10,000, has been organized by John F. Skinner, John Brennan and F. B. Eby.

DETROIT—F. J. Delmling, chief engineer Michigan Central railroad, is receiving bids for a 125-foot clear span double track bascule bridge over River Rouge for the joint use of the Michigan Central and the New York Central railroads.

PORT HURON, MICH.—Bids will be taken soon by the city of Port Huron for two motor driven centrifugal pumps and accessories and a venturi meter. E. Whitmore is city engineer.

PORT HURON, MICH.—Plans are being made by the city for water main extensions and the installation of two centrifugal pumps to cost $53,000. E. Whitmore is city engineer.

SAGINAW, MICH.—Mills & Merrill are having plans prepared for a machine shop costing $87,000.

CHICAGO—Mason Davis & Co., 7740 South Chicago avenue, is building a foundry 32 x 181 feet.

CHICAGO—The Crane Co. has applied for a permit to erect a brick and steel warehouse.

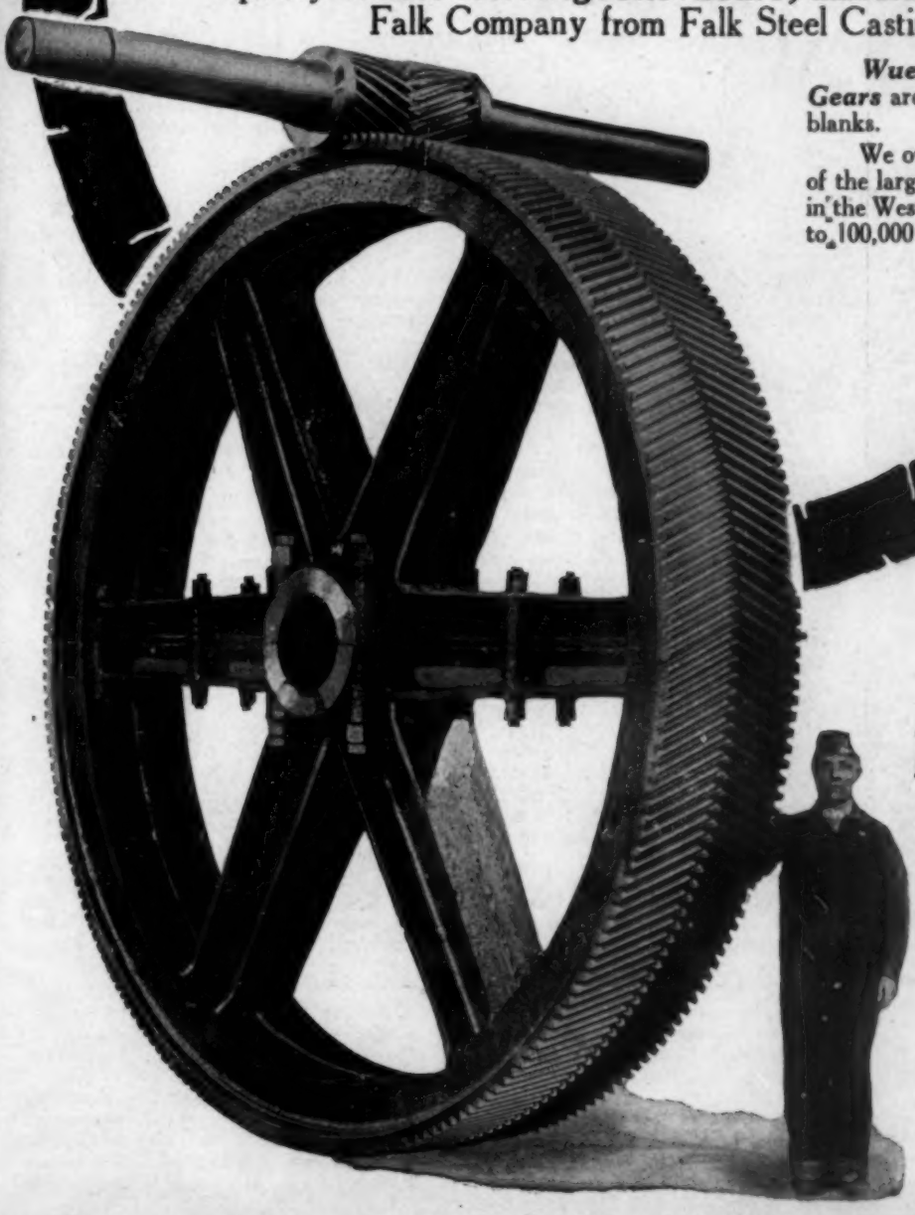
CHICAGO—The Ott Gear Grinder Co. recently was

WUEST HERRINGBONE GEARS

If you are interested in obtaining
—maximum mechanical efficiency
—elimination of shock and vibration
—minimum noise
—absolute reliability
specify ***Wuest Herringbone Gears,*** manufactured by the Falk Company from Falk Steel Castings.

Wuest Herringbone Gears are hobbed from solid blanks.

We own and operate one of the largest Steel Foundries in the West, capacity 1 lb. to 100,000 lbs.



The Falk Company
Milwaukee, Wis.

Agents:
Pittsburgh—W. O. Beyer, 1024 Park Bldg.
New York—M. P. Fillingham, 50 Church St
Wilkes-Barre—Vulcan Iron Works
Denver—Denver Engineering Works
San Francisco—F. W. Grimwood, Rialto Bldg.

incorporated with $5000 capital by Albert J. Ott, Conrad L. Ott and James N. Sheridan.

CHICAGO—H. C. Saal, of the H. G. Saal Co., tools and hardware specialties, 4410 Ravenswood avenue, will build a 2-story factory, 110 x 220 feet.

CHICAGO—The Concrete Steel Co., 53 West Jackson boulevard, will build a 1-story structure, 80 x 150 feet.

CHICAGO—The Hill Pump & Valve Co., Archer avenue and Canal street, is erecting a storage building, 60 x 80 feet.

CHICAGO—The Beare Valve Co., 255 East Ninety-fifth street, B. E. Jones, president, is building a 2-story factory.

CHICAGO—The A. Finkl & Sons Co., 1326 Cortland street, is building a foundry, 65 x 90 feet, to cost $10,000.

CHICAGO—The Palmer Rail Joint Spring Co., capitalized at $90,000, has been chartered by A. T. Palmer, Paul Hoffman and H. F. Post.

CHICAGO—The American Armature & Electric Co., capitalized at $5000, has been chartered by William A. Dunn, George F. Hughes and Festus Smith, 1638 West Fifty-seventh street.

CHICAGO—The General Machine Corp., capitalized at $25,000, has been chartered by J. J. Comer, F. T. Madsen and M. B. Setter, 3848 North Clark street.

CHICAGO—The American Wrench & Specialties Co., capitalized at $75,000, has been chartered by Charles Ensley, C. W. Schaeffer and William B. Keefe, 140 North Dearborn street.

CHICAGO—The Chicago Gear Mfg. Co., Charles A. Weber president, 1350 West Jackson boulevard, is planning to build a 1-story plant, 80 x 150 feet, to cost $30,000.

CHICAGO—The Wisconsin Steel Co., Torrence avenue, is building 2-story additions to its by-product plant, 84 x 713 feet, 52 x 125 feet and 34 x 84 feet.

EAST CHICAGO, IND.—The Locomotive Superheater Co. will build a 1-story shop 110 x 233 feet.

EVANSVILLE, IND.—M. D. Helfrich, head of the Helfrich Lumber Co., will build lumber mills in Knight township.

FT. WAYNE, IND.—The Ft. Wayne & Northern Indiana Traction Co., Pearl and Main streets, J. R. McKay mechanical engineer, will build a 1-story car shop costing $11,000.

HAMMOND, IND.—The laboratory building of the Hubbard Steel Foundry was badly damaged by fire. The loss was estimated at $50,000.

NEW ALBANY, IND.—The National Hame & Chain Co., New Albany, has recently purchased the plant of Nixdorff-Krein Mfg. Co., St. Louis, and is moving the equipment and machinery to New Albany.

PETERSBURG, IND.—The Globe Mining Co., operating at Ayrshire, is in the market for several steam shovels to strip 20 feet of earth.

PETERSBURG, IND.—The Pike County Coal Co. has plans for rebuilding immediately the steel tipple which was burned. The plant is being equipped to handle 3000 tons of coal daily.

TERRE HAUTE, IND.—The Will-Roll Bearing Co. recently was incorporated with $10,000 capital, by Ben Heer, William R. Wilson and John H. Swander.

VINCENNES, IND.—The Adams Tool Co., capitalized at $50,000, has been chartered to manufacture tools by William R. Flint, William F. Farrell and W. B. Adams.

AKRON, O.—Plans have been ordered prepared for the erection of a bridge over the canal ditch at Ash street. Address the county commissioners.

AKRON, O.—Clarence D. Caruthers, 401 Carroll street, has a permit to erect a 1-story, 22 x 50-foot factory building.

BELLEVUE, O.—A bond issue election will be held Jan. 7, on an issue of $135,000, the proceeds to be used in waterworks extensions.

BRYAN, O.—The city has not yet awarded the contract for the installation of new engines at the municipal lighting plant.

CAMBRIDGE, O.—The Rowland & Price Steel & Iron Co. recently was incorporated by Mark A. Copeland and others, with $50,000 capital.

CINCINNATI—The Philip Carey Mfg. Co. is said to be considering the erection of a large addition to its plant at Lockland.

CLEVELAND—The Lang Body Co., 610 Garfield building, plans the erection of a factory.

Cleveland—The Leonard Patent Burner Co. recently was incorporated with $10,000 capital by William A. Hart, Charles S. Farver and Herbert C. Cummins.

CLEVELAND—The Crucible Steel Forge Co. contemplates erecting a factory.

CLEVELAND—Plans are being drawn for the city by Fuller & Eddy, New York, consulting engineers, for the erection of a sewage disposal plant.

Business In Canada

PORT HANEY, B. C.—The Standard Shipbuilding Co., Vancouver, B. C., has purchased a site upon which it will erect a shipbuilding plant.

CHATHAM, ONT.—The Chatham Malleable & Steel Mfg. Co., Ltd., is in the market for an engine lathe, 8 to 10-foot bed, with turret head and taper attachments.

ELORA, ONT.—The T. E. Bissell Co., Mill street, will rebuild the main factory of its plant recently damaged by fire, and is asking for prices on new machinery and equipment.

HAILEYBURY, ONT.—The United Iron Works & Machine Co. is looking for a site and will erect a foundry.

HARROW, ONT.—The town council is having plans prepared for a power plant and installation of electric system. J. H. Madill is clerk.

LEASIDE, ONT.—The Leaside Munitions Co., Ltd., has been incorporated to manufacture iron, steel, machinery, etc., with $10,000,000 capital, by Emil A. Wallberg, Frederick J. Bell, both of Toronto, Ont.; Herbert H. Horsfall and others of Leaside. The company recently completed the erection of an addition and is now installing machinery.

LONDON, ONT.—The Dennis Wire & Iron Works Co., 22 Dundas street, will erect a new building.

NIAGARA FALLS, ONT.—The McClean Machine & Tool Co., Ltd., has been incorporated to manufacture machinery, tools, implements, etc., with $50,000 capital, by George H. Gilday, Robert L. Webster, Loretta Flynn and others of Toronto, Ont.

PRESTON, ONT.—The McKenzie Machinery Co., Ltd., has been incorporated to manufacture machinery, tools, etc., with $200,000 capital, by Daniel McKenzie, Guelph, Ont.; Jean Charlesworth, Florence G. Biscoe and others of Brantford, Ont.

Business Changes Recently Announced

WITH personnel of stockholders, trustees and officers remaining unchanged, the Westerman Iron Works, Seattle, has changed its corporate style to the Bacon & Matheson Forge Co. The Westerman Iron Works was established in 1886 and incorporated in 1898. Cecil H. Bacon is president, W. Scott Matheson, vice president and A. J. Carmody is secretary.

* * *

Millers Bros., Marshfield, Wis., wholesale scrap iron dealers, are remodeling the former Hans Bille factory building, which they recently acquired for a warehouse and storeroom.

* * *

The name of the Garland Nut & Rivet Co., West Pittsburgh, Pa., was recently changed to the Garland Mfg. Co.

* * *

The F. L. Schmidt Co., Inc., Eleventh avenue and Twenty-first street, New York, manufacturer of machinery, has changed its name to the F. L. Smith Machine Co.

* * *

The American Machinery Syndicate's offices in New York have been removed to larger quarters in the Commercial Engineers building, 35 West Thirty-ninth street.

* * *

The Ohio Brass Co., Mansfield, O., has removed its New York office from 30 Church street to 1781 Hudson Terminal building, 50 Church street.

* * *

The Manning Sand Paper Co., Troy, N. Y., has changed its name to the Abrasive Co.

The John Knape Machine Co., Grand Rapids, Mich., has changed its name to the Knape & Vogt Mfg. Co. It has increased its capitalization and facilities to produce metal specialties.

* * *

George Dubucs, 53 West Sixty-third street, New York, now is George Dubucs, Inc., with a capital of $25,000 to manufacture magnetos and parts.

* * *

The offices of the California Metal Trades association have been moved from the Southern Pacific building, San Francisco, to the Rialto building.

* * *

The United Electric & Welding Co., Baltimore, has changed its name to the United Electric Welding Co.

* * *

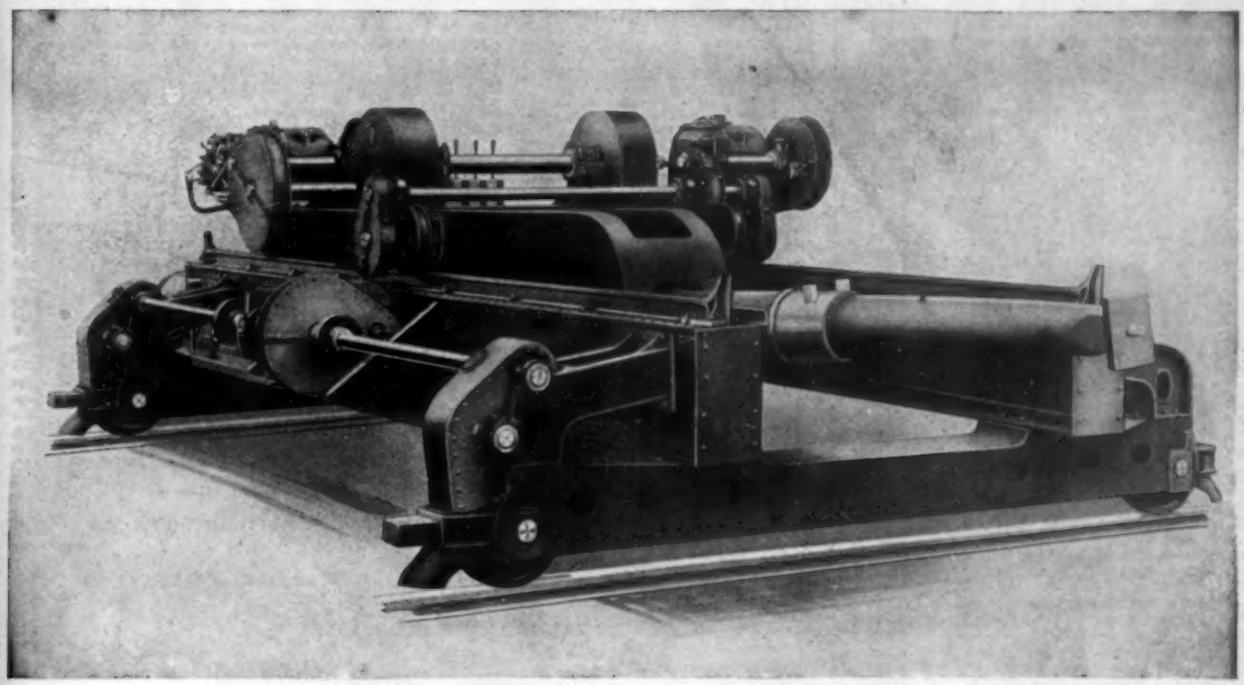
The Western Iron Works, Spokane, has removed to Anacortes, Wash. It manufactures tractors, farm trucks, etc.

* * *

The Consumers Metal Co., Ltd., will remove its main office from 14 St. John street, Montreal, to a new building in Twentieth avenue, Lachine, Que.

W-S-M

STEEL PLANT EQUIPMENT
COKE OVEN MACHINERY
GAS PRODUCERS
ORE AND COAL HANDLING MACHINERY
SPECIAL CRANES
MINING MACHINERY
HYDRAULIC TURBINES



Charging Machines

The Wellman-Seaver-Morgan Company originated, first built, developed, and for many years was the sole constructor of mechanical chargers for open hearth furnaces.

The W-S-M Low Type Charger is pictured above. Some conditions indicate the use of the High Type Charger or the Crane Type.

We are prepared to build a special machine for your particular requirements.

Bulletin A 7, "W-S-M Charging Machines and Manipulators," will be sent on request.

THE WELLMAN-SEAVER-MORGAN CO.

CLEVELAND, OHIO, U.S.A.

Iron and Steel Prices

Corrected to Tuesday Noon

IRON ORE

Superior Ores, Per Ton, Lower Lake Ports	
Old range Bessemer, 55 iron	$6.65
Mesabi Bessemer, 55 iron	6.40
Old range non-Bess., 51½ iron	5.90
Mesabi non-Bess., 51½ iron	5.75

WAREHOUSE PRICES

Steel bars, Chicago	4.17c
Steel bars, Cleveland	4.07c
Steel bars, Detroit	4.13c
Steel bars, Philadelphia	4.145c
Steel bars, New York	4.17c
Steel bars, St. Louis	4.24c
Steel bars, Cincinnati	4.13c
Steel bars, St. Paul	4.395c
Steel bars, Buffalo	4.10c
Iron bars, Buffalo	4.70c
Iron bars, Chicago	4.77c
Iron bars, Cleveland	4.67c
Iron bars, Detroit	4.75c
Iron bars, St. Louis	4.84c
Iron bars, Cincinnati	4.13c
Iron bars, Philadelphia	4.745c
Iron bars, News York	4.77c
Shapes, Chicago	4.27c
Shapes, Detroit	4.23c
Shapes, St. Louis	4.34c
Shapes, St. Paul	4.495c
Shapes, New York	4.27c
Shapes, Cleveland	4.17c
Shapes, Philadelphia	4.245c
Shapes, Buffalo	4.20c
Shapes, Cincinnati	4.23c
Plates, Buffalo	4.45c
Plates, Chicago	4.52c
Plates, Detroit	4.48c
Plates, St. Louis	4.59c
Plates, St. Paul	4.745c
Plates, New York	4.52c
Plates, Cleveland	4.42c
Plates, Philadelphia	4.495c
Plates, Cincinnati	4.48c
No. 10 blue anl. sheets, Chicago	5.52c
No. 10 blue anl. sheets, Cleveland	5.42c
No. 10 blue anl., Buffalo	5.45c
No. 10 blue anl. sheets, St. L.	5.59c
No. 10 blue anl. sheets, Cincinnati	5.48c
No. 10 blue anl. sheets, St. Paul	5.745c
No. 10 blue anl. sheets, Detroit	5.48c
No. 28 black sheets, Chicago	6.52c
No. 28 black sheets, Cleveland	6.42c
No. 28 black sheets, Cincinnati	6.48c
No. 28 black, Detroit	6.49c
No. 28 black sheets, St. L.	6.59c
No. 28 black sheets, St. Paul	6.745c
No. 28 galv. sheets, Chicago	7.77c
No. 28 galv. sheets, Cleveland	7.67c
No. 28 galv. sheets, Cincinnati	7.75c
No. 28 galvanized, Detroit	7.73c
No. 28 galv. sheets, St. L.	7.84c
No. 28 galv. sheets, Buffalo	7.70c

IRON AND STEEL SCRAP

(Prices in Gross Tons)

STEEL WORKS USE

Bundled sheets, Cincinnati	24.50 to 25.00
Bundled sheets, Pittsburgh	27.50 to 28.00
Bundled sheets, Cleveland	26.00 to 27.00
Bundled sheets, Buffalo	22.00 to 23.00
Boiler plate, cut, No. 1, Chicago	24.00 to 24.50
Boiler plate, cut, No. 1, St. Louis	19.00 to 19.50
Frogs, switches, guards, St. Louis	27.50 to 28.00
Frogs, switches, guards, Chicago	29.00
Heavy melting steel, Pittsburgh	28.00 to 28.50
Heavy melting steel, Buffalo	27.00 to 28.00
Heavy melting steel, Chicago	28.00 to 29.00
Heavy melting steel, Cleveland	28.00 to 28.50
Heavy melting steel, Cincinnati	27.00 to 27.50
Heavy melting steel, east. Pa.	26.50
Heavy melting steel, N. Y.	23.00 to 24.00
Heavy melting steel, St. L.	27.00 to 27.50
Heavy melting steel, Birmingham	22.00 to 23.00
Baled sheets, Cleveland	28.50 to 29.00
Baled sheets, Pittsburgh	27.50 to 28.00
Baled sheets, Chicago	28.00 to 29.00
Knuckles, couplers, Chicago	33.00 to 34.00
Knuckles, couplers, St. Louis	30.00 to 30.20
Low phos. steel, Buffalo	36.00 to 37.00
Low phos. steel, Pittsburgh	38.50 to 39.00
Low phos. crops, eastern Pa.	39.00
Low phos guaranteed E. Pa.	36.50
Shoveling steel, Chicago	28.00 to 29.00
Shoveling steel, St. Louis	26.00 to 26.50
Steel rails, short, Chicago	34.00
Steel rails, short, Cleveland	32.00 to 33.00
Steel rails, short, St. Louis	29.00 to 29.50
Steel rails, old, Birmingham	25.00 to 26.00
Stove plate, Chicago	23.50 to 24.50
Stove plate, Cincinnati	21.50 to 22.00
Stove plate, St. Louis	19.00 to 19.50
Stove plate, N. J. points	23.75
Stove plate, Birmingham	20.00 to 22.00
Stove plate, Buffalo	25.00 to 26.00
Stove plate, eastern Pa.	29.00
Stove plate, Cleveland	25.00 to 25.50
Stove plate, Pittsburgh	28.00 to 29.00

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70
Buffalo to:	
Albany, N. Y.	$1.75
New England (rail)	3.90
New York and Brooklyn (rail)	3.90
Virginia furnaces to:	
Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40
Birmingham, Ala., to:	
Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
St. Louis	4.25
Chicago to:	
Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90
Ironton and Jackson, O., to:	
Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:	
New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

IRON MILL USE

Busheling, No. 1, Cleveland	29.50 to 31.50
Busheling, No. 1, Buffalo	27.00 to 28.00
Busheling, No. 1, Pittsburgh	29.00 to 30.00
Busheling, No. 1, Cincinnati	27.00 to 27.50
Busheling, No. 1, Chicago	28.50 to 29.00
Busheling, No. 2, Chicago	19.50 to 20.50
Busheling, No. 1, St. Louis	27.00 to 27.50
Cast borings, New York	15.50 to 15.75
Cast borings, eastern Pa.	19.00
Cast borings, Buffalo	17.00 to 18.00
Cast borings, Cleveland	18.00 to 18.25
Cast borings, Cincinnati	16.00 to 16.50
Cast borings, Pittsburgh	19.00
Cast borings, Birmingham	17.00 to 18.00
Cast borings, Chicago	16.50 to 17.00
Cast borings, St. Louis	16.00 to 16.50
City wrought, long, N. Y.	27.50 to 28.00
Cut forge, Chicago	30.50 to 31.00
Forge No. 1, eastern Pa.	26.50
Forge flashings, large, Cleveland	27.00 to 27.50
Forge flashings, small, Cleveland	28.00 to 29.00
Grate bars, Buffalo	24.00 to 25.00
Grate bars, Cleveland	25.50 to 26.00
Grate bars, N. J. points	23.75
Iron axles, Pittsburgh	46.50
Iron axles, Cincinnati	43.50 to 44.00
Iron axles, Cleveland	46.50
Iron axles, Chicago	46.50
Iron axles, eastern Pa.	46.50
Iron axles, St. Louis	42.00 to 42.50
Iron axles, Buffalo	42.00 to 43.00
Iron rails, Chicago	39.00
Iron rails, Buffalo	34.00 to 35.00
Iron rails, Cincinnati	34.50 to 35.00
Iron rails, St. Louis	35.50 to 36.00
Iron rails, Cleveland	37.00 to 38.00
Machine turnings, Cincinnati	16.00 to 16.50
Machine turnings, Cleveland	18.00 to 18.25
Machine turnings, Buffalo	17.00 to 18.00
Machine turnings, N. Y.	15.50 to 15.75
Machine turnings, Pittsburgh	18.00 to 19.00
Machine turnings, east. Pa.	19.00
Machine turnings, Birmingham	16.00 to 17.00
Machine turnings, Chicago	16.00 to 17.00
Machine shop turnings, St. Louis	17.00 to 17.50
Pipes and flues, Cleveland	26.50 to 27.50
Pipes and flues, Chicago	25.25 to 25.75
Pipes and flues, St. Louis	21.00 to 21.50
R. R. mach. cast, No. 1, Buffalo	32.00 to 33.00
R. R. wrgt. No. 1, Buffalo	32.00 to 33.00
R. R. wrgt. No. 1, east Pa.	34.00
Railroad wrgt. No. 1, Cincinnati	32.00 to 32.50
Railroad wrgh., No. 1, Cleveland	33.50 to 34.00
R. R. wrought, No. 1, Pittsburgh	34.00
Railroad wrgt., No. 2, Chicago	30.50 to 31.00
Railroad wrought, No. 1, Chicago	32.00 to 32.50
R. R. wrought, No. 1, Birmingham	25.00 to 26.00
No. 1 yard wrought, Eastern Pa.	33.00
No. 1 busheling wrgt., East. Pa.	31.00
Sheet wrought, Pittsburgh	34.00
Railroad wrgt., No. 1, St. Louis	30.00 to 30.50
Railroad wrought, No. 2	29.00 to 29.50
Wrought pipe, Buffalo	27.00 to 28.00
Wrought pipe, East. Pa.	31.00
Wrought pipe, ungraded, East. Pa.	29.00

IRON OR STEEL WORKS USE

Axle turnings, Cleveland	$24.00
Axle turnings, Buffalo	23.00 to 24.00
Heavy axle turnings, East. Pa.	24.00
Heavy axle turnings, Pitts.	23.50 to 24.00
Shafting, New York	35.50
Shafting, East. Pa.	39.00
Steel car axles, Birmingham	30.00 to 32.50
Steel car axles, Pittsburgh	46.50
Steel car axles, New York	43.00
Steel car axles, Buffalo	42.00 to 43.00
Steel car axles, Cleveland	44.00
Steel car axles, East. Pa.	46.50
Steel car axles, Chicago	46.50
Shafting, St. Louis	32.00 to 32.50
Steel car axles, St. Louis	42.00 to 42.50

IRON FOUNDRY USE

Car wheels (iron), Pittsburgh	$29.00
Car wheels (steel), Pittsburgh	34.00 to 35.00
Car wheels, East. Pa.	29.00
Car wheels, Buffalo	29.00
Car wheels, Chicago	29.00
Car wheels, St. Louis	28.50 to 29.00
Car wheels, Birmingham	24.00 to 25.00
Car wheels, Cleveland	30.00
Tram car wheels, Birmingham	23.00 to 24.00
Cast, No. 1, Birmingham	25.00 to 26.00
Cast No. 1, cupola, East. Pa.	34.00
Cast, No. 1, Cleveland	32.50 to 33.50
Cast, No. 1, Cincinnati	31.00 to 31.50
Cast, 1, heavy, New York	30.50 to 31.00
Cast, 1, machy., New York	32.25 to 32.50
Cast, No. 1, Chicago	30.50 to 31.50
Cast, No. 1, Pittsburgh	32.00 to 32.50
Cast, No. 1, St. Louis R. R.	27.00 to 27.50
Malleable, Cincinnati	27.50 to 28.00
Malleable, Cleveland	33.00 to 33.50
Malleable, Buffalo	32.00 to 33.00
Malleable, Pittsburgh	32.00 to 32.50
Malleable, East. Pa.	29.00
Malleable, cupola, East. Pa.	33.00
Malleable, railroad, Chicago	30.50 to 31.50
Malleable, agricultural, Chicago	30.00 to 30.50
Malleable, railroad, St. Louis	24.00 to 24.50
Malleable, agricultural, St. Louis	22.00 to 22.50

MISCELLANEOUS USES

Boiler punchings, Chicago	34.00 to 35.00
Reroll. rails, 5 ft. and over, Pitts.	34.00
Reroll. rails, 5 ft. and over, Chi.	33.00 to 34.00
Reroll. rails, 5 ft. and over, E. Pa.	34.00
Reroll. rails, 5 ft. and over, St. L.	30.00 to 30.50
Reroll. rails, 5 ft. or over, Cleve.	34.00
Rerolling rails, long, Birmingham.	37.50 to 38.50
Locomotive tires, Chicago	38.00 to 39.00
Locomotive tires, St. Louis	33.00 to 34.00